THE ELEMENTARY SCHOOL JOURNAL

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Educational News and Editorial Comment

STANDARDIZATION IN EDUCATION

Under the title "Blight of Standardization," Charles W. Eliot makes the following statement in the *New York Times*.

A new blight is afflicting education and industries in the United States, particularly the educational part of industries. Its name is standardization, and there is a very general movement to give it application in a great variety of American activities. The blight seems to have started in the industrial domain. To save time, and therefore money, and to increase the productiveness of a given plant, the movements of the individual operative were carefully studied with a view to reducing the number of his movements and changes of posture and to increasing the automatic and repetitive quality of his work. The object was larger production at lower cost, and this object was gained; but the inevitable result was the destruction of the interest of the workman in his work. For the life-long interest of the handworker in the varied products of his skill was substituted the intolerable dullness of tending machinery on a standardized "stop-watch" program.

Soon standardization began to affect the school and college programs, the conditions of admission to college, and the qualifications for degrees. It limited injuriously freedom of election of studies in both school and college. It also affected the method of instruction in every school or college course, particularly in the lower or more elementary courses. Thereby, the liberty of the individual teacher, particularly in the lower grades, was restricted, and the expedient liberties of pupils and students were also confined.

It is obvious that standardization has become a dangerous adversary of progress in both education and industry. The ideal in education is to develop the utmost possible variety of individual attainment and of group attainment, just as the true goal of democracy is the free development of the utmost variety of capacity in the individual citizen. Uniformity in the attainment of skill, and therefore in earnings, leads, not to joy in work, but to discontent and unhappiness in the worker. The true educational goal is the utmost development of the individual's capacity or power, not in childhood and adolescence alone, but all through life. Fixed standards in labor, in study, and in modes of family life or of community life are downright enemies of progress for the body, mind, and soul of man. That doctrine is as true in churches, courts, and legislatures as it is in schools and factories. It is sometimes desirable to suggest minima as respects age, intelligence, or productive capacity, but never maxima.

It will be for the happiness of the American people to look carefully into the effects of standardization in both the national education and the national industries. It has already gone too far. Although some pecuniary economies can be effected by standardizing processes in both schools and factories, their physical and moral effects are unquestionably bad. As soon as any process in state or church proves to be injurious to the physical or mental quality of the population, a genuine democracy should set to work to modify or suppress it.

The reason that the majority of the American people is today unchurched is that the various Christian denominations or church institutions from the first century to the nineteenth set up fixed standards of belief and practice based on what was supposed to be final revelations. Since experimental science began, about 150 years ago, to contribute powerfully to the progress of mankind, those fixed standards in the church have beome discredited among thinking people; but, since the religious instinct is universal and irrepressible in man, a diligent search is now going on for a church free from standardization. This search and the co-operative management of the fundamental industries are the most promising efforts of the twentieth century.

This statement, unfortunately, does not distinguish between different types of standardization. There is the standardization which aims at uniformity; this ought to be condemned, and it is well that the great authority of President Eliot should be exercised in the direction of emphasizing the dangers of mechanical uniformity in education. But there is another kind of standardization. The isolated teacher in the one-room country school needs to have some device to show her whether her pupils are making the same kind of progress that pupils of similar age are making in graded schools in the city. The supervisor in the city school needs to have some device by which teachers can be clearly shown how

well or how badly their pupils are getting on. These people have, in the past, been working on purely individual standards, and modern scientific education has tried to put an end to the arbitrary and capricious control of school processes by purely personal estimates. Scientific education has supplied teachers with statements of what is to be expected at various stages of education in the light of carefully formulated experience.

The substitution of careful estimates of what children do and ought to do for arbitrary judgments is a form of standardization which Eliot certainly did not think undesirable when he organized the Committee of Ten. It is a form of standardization which he constantly employed in improving the instruction at Harvard. It is to be hoped that he will find time to issue to teachers a strong appeal in favor of the new quantitative and exact methods of banishing from the schools the vagaries which appear under a régime of purely personal control.

NEED OF MORE SCHOOL ACCOMMODATIONS

It happened that a single issue of the *Chicago Daily Tribune* contained two items on the same general theme. One was a news report regarding the crowded condition of schools in all parts of the country; the other was an editorial stating what ought to be the attitude of the people of Chicago with respect to the crowded condition of the schools in the second largest school system in the United States. There will be more discussion of these matters in the public press during the coming years. The United States has just reached the point where its theory of universal free education for all young people is beginning to cost about all that taxpayers are willing to pay without question. The next decades will be periods of much discussion and of much questioning. It behooves school people to be prepared to show that schools are worthy of support.

The two items referred to are as follows:

> A record breaking enrolment throughout the country will severely tax the public schools when they open next month, a survey of the United Press indicates.
>
> New York schools face the problem of placing thousands of new students. The board of education is unable to estimate the extent of the seat shortage, but it was stated that severe congestion cannot be avoided.

Houston will need 7,000 additional seats for the coming school year. Half-day sessions will be held to accommodate the children.

This year's school census in Detroit shows that there are 265,000 children. Should all censused children attend, school facilities for 25,000 more will have to be added.

Oklahoma City will be short seats for 1,500 pupils.

Washington, D. C., needs accommodations for 6,000 additional pupils.

Accommodation will be made in rented buildings to provide space for 9,000 students in Buffalo.

Four large buildings are being built at Madison, Wisconsin, to meet a shortage of 5,000 in seating capacity.

While Lincoln, Nebraska, has seating capacity for all students who will enrol, 50 per cent of the children will study in classrooms that are insanitary and lacking in modern equipment, according to W. W. Kurfmann, assistant superintendent of schools.

There will be a shortage of less than 1,000 seats in Atlanta, where wooden school buildings have been replaced with several modern grammar schools.

Schools are overcrowded in San Francisco, where conditions have been bad for four or five years.

There will be no shortage in Denver, Boston, New Orleans, Columbus, Des Moines, Ia., or Springfield, Ill.

In Indianapolis the school board is starting a $1,500,000 building program immediately to provide facilities for 5,000 pupils who will have to be housed in temporary classrooms until eight new buildings are ready.

St. Paul is spending $8,000,000 for new buildings.

The lack of school accommodations for the children of Chicago is not to be tolerated. This is not a matter on which there should be any compromise. The community is not in a condition of destitution. The city is a great and rich community. It has a duty to its youth, a duty transcending any other duty except the maintenance of order, health, and safety. It is the duty to give proper instruction, under proper conditions.

At this time the capacity of the schools is, according to estimate of attendance, 48,000 seats short. Out of 200 elementary schools, 75 will have at least one room in which the pupils will have to sit two in a seat. The conditions have been made public and need not be repeated here.

We say that they are not creditable to Chicago's citizenship. They exist, and for the time being the school trustees who found them when they took the job must do the best they can with them. But doubling up pupils, and staggering school hours, and renting halls, and whatever the school authorities contrive to make our insufficient plant do more than it was built for, are all in fact a rebuke and a reproach. No wise citizen can be proud of a city that does not make generous provision for the education of its young. Our minimum should be a seat for every child, in a well-ventilated, well-heated, well-lighted,

cheerful school; competent teachers, neither overworked nor underpaid; adequate equipment and instruction for mind and body.

Chicago can afford all of that. Chicago cannot afford to have less than that. It costs money. It means taxation. But to neglect the child costs money and more than all our money could compensate us for, if we lose it, for what we lose will be America's future. To neglect the child is to lose the man, and all we possess of good depends upon the quality of our men and women.

This is truism, but we are ignoring it in this city. The condition of our schools, physically and educationally, is the most important of our civic problems.

An item setting forth the congestion in school buildings as shown by another investigation is as follows:

The problem of providing adequate school accommodations continues to be of nation-wide proportions. An investigation made not long ago by the National Chamber of Commerce revealed the fact that, despite recent activities in the way of erecting new buildings, hundreds of thousands of children are still on part time and consequently deprived of the full education to which they are entitled. It was disclosed that 298 of the 900 American cities of 8,000 or more population were using more than 3,000 portable buildings in which they were housing 121,000 pupils. There were 43,000 pupils in rented dwellings, lofts, stores, etc.; 55,000 in annexes, 8,000 in halls and corridors, 3,000 in attics, and 31,000 in basement rooms.

The same survey shows a noticeable tendency in the direction of larger schoolhouses. After many years of wasteful expenditure on eight-room buildings, school authorities are beginning to realize that the large building is more economical in every way. Modern education demands a variety of equipment such as is entirely beyond the capacity of the small schoolhouse to supply. The cities are erecting buildings containing twenty-four rooms and more; the towns, as fast as they can, are abandoning small buildings in favor of consolidated schools.

CHILD-LABOR LEGISLATION

Two very impressive news items on child-labor legislation have appeared recently. The first is in the *American Child*, the bulletin of the National Child Labor Committee, and summarizes the achievements in this field during the past year. A part of this summary is as follows:

Absolutely the first effort within our knowledge to regulate agricultural child labor was made in Wisconsin, where a bill providing for investigation and regulation of child labor in cherry orchards, sugar-beet fields, and cranberry

bogs received strong support in the legislature, although it was finally defeated. Of the forty-one legislatures which were in session, twenty brought to a vote bills concerning some phase of the child-labor question.

LAWS PASSED REGULATING HOURS OF WORK FOR CHILDREN

Delaware.—Eight-hour day, forty-eight-hour week for all workers under sixteen.

Maine.—Eight-hour day for all under sixteen.

Mississippi.—Eight-hour day for all under sixteen.

South Dakota.—Fifty-four-hour week for all under sixteen.

Wyoming.—Eight-hour day for all under sixteen.

LAWS PASSED REGULATING NIGHT WORK FOR CHILDREN

Connecticut.—Work forbidden after 10:00 P.M. in all bowling alleys for those under sixteen.

Delaware.—Work forbidden from 7:00 P.M. to 6:00 A.M. for all under fourteen, and for those under sixteen in street occupations.

Wyoming.—Work prohibited from 7:00 P.M. to 7:00 A.M. for all under sixteen. Farm labor and domestic service excepted.

LAWS PASSED SETTING AGE LIMIT FOR CHILD WORKERS

Delaware.—Sixteen-year age limit for listed dangerous occupations, including mines.

Michigan.—Twenty-year age limit for females working at dangerous machinery reduced to eighteen years.

Rhode Island.—Fifteen-year age limit for any manufacturing or business.

Wyoming.—Fourteen years, all gainful occupations; sixteen years, dangerous occupations. Farm labor or domestic service exempted.

LAWS PASSED REGULATING COMPULSORY SCHOOL ATTENDANCE

Kansas.—Attendance compulsory up to sixteen years and completion of the eighth grade.

Rhode Island.—Attendance compulsory up to fifteen.

LAWS PASSED REGULATING COMPENSATION FOR MINORS

Indiana.—Compensation bill similar to New York's passed and later thrown out because of technicality.

New York.—Double compensation for minors injured while illegally employed.

The second item is an editorial which appeared in a recent issue of the *London Times Educational Supplement.* This will interest American readers for two reasons: first, it gives a view of the late President which is not always clearly in the minds of the American

people, although the editorial comments which were made in this country at the time of the President's death so frequently called attention to his idealism in politics and in public life that something of the same view gained wider currency than it could during the political struggles which in recent years have absorbed the attention of newspaper readers; second, it contains an account of the efforts to secure a favorable situation with regard to educational and labor conditions for children, both in this country and in Europe.

When President Harding died last week, there passed into history one who found time, among the many burdens of his great office, to work hard for the amelioration of the life of juvenile workers in the United States of America. He saw, both as a statesman and as a humanitarian, that evil conditions of labor among the young are disastrous to national life. In working for the bettering of the conditions of labor he was taking up the great policy of social and political freedom which his predecessor Lincoln laid down. Conditions in respect to juvenile labor are not good in the United States, nor are they good here, but the fact is so well recognized and reform has been so well started that it will need no political or social war to achieve that freedom for the adolescent which is still illusory. But the contest in the field of applied economics in this country, as well as in America, will be a stern one. The reaction that follows every great war is against improved economic conditions, partly because national poverty so largely controls the situation, partly because the will to effort has been strained to the utmost, and partly because the reactionary forces in all their ignorance of sound economy are always active when the will to progress is in abeyance. Poverty is perhaps the least of the English difficulties, since the power to expend money is the least of the powers that make for economic righteousness. The position in America shows this clearly enough. There money is plentiful, and it is spent on education with a lavish hand, and yet the conditions of juvenile labor are probably worse than they are in England. The laws of compulsory school attendance are openly disobeyed, while the well-equipped and richly endowed secondary schools find it difficult to retain children for more than a year. Lack of money is not the cause of the evil conditions of juvenile labor. Nor is a more obvious cause, the existence of reactionary forces in all classes of society, the real danger. These forces are very active at present, but they are being fought by many thousands of social workers, and it is certain that they are doomed to ultimate defeat. The real danger is the ignorance and stupidity of employers, and especially of the small employers. It is these men and women who are, almost unconsciously, holding back the nation from its due development.

It is well to recall the definite victories that have been achieved already on behalf of young workers in America and England alike. An international act, now operative in both countries, the statute known in England as the

Employment of Women, Young Persons, and Children Act, 1920, was one of the first fruits of the Treaty of Versailles. It has stopped child labor in factories and other great centers of industry, and it has regulated the labor of women and of persons over the age of fourteen. No boys under sixteen can now undertake night work in blast furnaces, iron mills, paper mills, and glass works. The act represents a definite stage of advance, but it has its limitations. It, in effect, deals only with evil conditions in works controlled by the greater employers. In England we have registered another victory, now enshrined in the Education Act, 1921. The labor of children still at school is practically forbidden and is placed under close restriction on Saturdays and Sundays. The old half-time system has disappeared, and all children are now sure of a school education up to the age of fourteen years at least, unfettered by the call of any employer. Thus America has partly, and we have almost wholly, overcome the dire evil of child labor; and social workers in both countries are striving, sometimes with the assistance of the state and of the local authorities, to ameliorate still further those social conditions and environments which impose on children and adults alike inadequate sleep and broken health. It is at last fully realized that a sound physical basis is the main condition precedent to a sound education and a healthy national life. These are great achievements which it would be foolish to underrate. The rising generation is provided with better chances in the way of health and education than any other generation in the world's history. That is in fact no great boast, since from the beginning of time the waste of child life has been the scourge of every form of human society. Modern society has determined to root out the scourge and has gone some little way toward achieving its goal.

That the goal is not reached is shown by the attitude of the small employer of labor, and some few large employers, toward juveniles. Lord Henry Bentinck has introduced into the House of Commons a measure intended to deal with the work of young persons between the ages of fourteen and eighteen. The education (employment of young persons) bill is very brief. It would enable local education authorities to extend their power of making by-laws dealing with the work of children to the case of juveniles who have passed the statutory age of compulsory school attendance. The power to frame such regulations would be optional, and so no immediate or universal change of the law would be involved. The bill has the support of members drawn from all parts of the House and should become law during the autumn session. In an article on the subject which we published last week it is shown that there is a marked tendency to increase the hours of young persons in unregulated industries. Children who have just left school and become van boys, messenger boys, and errand boys, and young people engaged in eating and refreshment houses are sometimes required to work sixty hours a week. The hours are such that they would not be tolerated by adult workers. Before the war these juvenile workers were often engaged for eighty hours in a six-day week, while apparently respectable firms were accustomed to require a ten-hour day exclusive of meal times.

The work in warehouses showed also unsatisfactory conditions. It was proposed by a departmental committee before the war that seventy hours a week should be a maximum in the case of juvenile labor, and this was regarded as a real improvement. Today, with our new knowledge as to the economic waste involved in long hours of work, this proposal is seen to be wholly inadequate, but it is felt that the local authorities should deal with the matter in such a way as to meet local conditions. The report of the chief inspector of factories, issued last week, shows that the need for shorter hours is generally recognized in organized labor, and the week of sixty hours with perhaps thirty hours' overtime in many cases has been replaced by a forty-four to forty-eight hour week with little overtime and one rest day. How is this sound economic change to be brought about in the unregulated industries? By-laws will do a good deal, but what is even more important is a compaign against the ignorance of the small employers.

EXTENSION WORK IN SCHOOLS

Expansion of the educational system in America is appearing, not only in the institutions of learning devoted to the training of the youth of the country, but also in extension courses offered to adults. The following extracts are taken from a bulletin recently issued by the Bureau of Education and prepared by Charles G. Maphis, director of extension, University of Virginia.

The demand for popular education to include "all the people" is rapidly growing and will soon manifest itself in state-wide programs for all citizens of all occupations and all ages—men, women, and children—who cannot obtain formal instruction in the schools and colleges.

Notwithstanding the remarkable increase in enrolment in secondary schools and colleges extension teaching has been the outstanding feature of educational effort in the last two years and in growth has far surpassed any other phase of educational development. This growth is not ephemeral but substantial. Higher standards are being set and maintained, and those engaged in the older types of instruction are more readily and more fully recognizing and crediting the work which is being done.

University extension in some form has been carried on since the inauguration of Chautauqua University in 1885. The University of Wisconsin, the pioneer state institution in the field, took up the work in 1892. The International Correspondence School, a large commercial school, was organized within a year of that time. It was not until 1906, however, that Wisconsin organized its University Extension Division on its present basis as an extramural college with a dean and a separate faculty.

Between 1906 and 1913, inclusive, twenty-eight institutions organized university extension, and within those dates twenty-one other institutions reorganized. In the last decade the work has developed so extensively that practically

every institution of learning—university, college, normal school, technical school, or professional school, whether private or public—now engages in some form of extension activity.

Why? Because extension service is the practical application of the principle underlying all tax-supported educational institutions from the elementary school to the state university.

Justification for the maintenance of schools, colleges, and universities from public moneys is contained in the general welfare clause of our national and state constitutions.

The only justification for the expenditure of public funds derived from taxation by the state for universal education is the fact now recognized by all commonwealths that education is generally an asset and an illiterate or untrained citizen a liability in a community. Thomas Jefferson declared with fervor that "no other foundation can be devised for the preservation of freedom and happiness than the diffusion of knowledge among the people. If a people expects to be ignorant and free in a state of civilization, it expects what never was and never will be. Preach a crusade against ignorance!"

On this principle the United States has entered upon the most gigantic educational task undertaken by any nation, namely, to provide at public expense educational opportunity for "all the children of all the people" from the kindergarten and elementary school through the university.

The program of universal education upon which the United States has entered contemplates only the education of our youth, on the assumption that the schools provide a sufficient amount of education of the proper character to satisfy the requirements of good citizenship. This has proved not to be the case. A very large proportion of pupils of the elementary school drop out at the end of the fifth year with only the bare elements of an education and a fair use of the tools of knowledge, and increasing numbers are eliminated in each grade after the fifth up through the high school.

While most of the extension work is directed by state universities, much of it is done in co-operation with other institutions and agencies. For example, the extension work of the University of Michigan is carried on through twelve bureaus. Through the medium of these bureaus it co-operates with the various colleges and schools of the university, such as the General Library, the Medical School, the Medical Society, and the State Dental Society, the State Board of Health, and the Detroit College of Medicine and Surgery.

The work may be aided materially by co-operation with such organizations as the American Institute of Banking, the Credit Men's Association, chambers of commerce, union labor, public schools, Federal Board for Vocational Education, the American Legion, the Y.M.C.A., the Y.W.C.A., industrial concerns, and so on.

Among the many possibilities opened to the world by the development of radiophony, the educational opportunities which are offered to the public by means of the radio are the most important and far-reaching. Not only the

possibility of receiving instruction from the finest teachers in the country but the cultural opportunities made available by the perfection of radio means much to thousands of people who have installed outfits.

Universities have recognized the great good to be gained by sending instruction over the ether waves and are using the radio as a medium for extension courses. Operatic and symphony concerts, the day's news, market and weather reports, all the things which go to make life rich in experience, can now be dispensed through the air to all who will listen.

Foreseeing millions of listeners, the bulk of them of college age, the National Radio Chamber of Commerce is developing a plan to establish radio extension courses in American colleges and universities. In radio, education has found a new and powerful ally.

Sixty educational institutions are broadcasting educational and musical programs, forty-seven of them being colleges and universities. The combined area nominally covered by these institutions has been estimated to be seven or eight times the total area of the United States. There are in the United States between 1,000,000 and 1,500,000 radio receivers, representing between 3,000,000 and 4,000,000 radio listeners located within comfortable range of the speaker's voice of one of 600 broadcasting stations. These listeners are, for the most part, of school and college age. Their number is rapidly increasing and will, undoubtedly, within a few years total many millions.

RATING MEMBERS OF SCHOOL BOARDS

Pupils have long been rated; teachers have recently been subjected to scrutiny and careful scoring of their virtues and defects. The suggestion is now made by Professor Mendenhall of the State Teachers College of Pittsburg, Kansas, that members of rural school boards be treated as pupils and school officers have been treated in the past. To the end that his suggestion may bear fruit, he has set down twenty-six questions that he thinks may properly be asked about a member. We quote a few typical questions:

Has he at least a common-school education?

Does he own his home?

Does he do a reasonable amount of reading of standard farm papers, and does he take and read at least one magazine or periodical of recognized worth?

Is he reasonably successful in conducting his own business?

Is he easy to get along with and not of a fault-finding disposition?

At local school meetings does he show himself favorable to spending money for better teachers and better equipment?

Has he visited the school while in session at least three times during the year?

In voting for a teacher, is he influenced primarily by her professional fitness as determined by the county superintendent, or by other expert opinion, rather than by kinship, local influence, etc.?

In voting for a teacher, does he consider maturity, character and extent of training, and teaching experience?

Does he consult the county superintendent frequently before buying supplies and hiring teachers, and does he follow the county superintendent's advice on these matters?

Does he keep posted as to schools in other places and try to make his school equal to or better than the average school?

Is he willing to allow the teacher of his school at least $15 to $30 for supplementary books to be spent at her discretion?

SUPERVISION AND NO SUPERVISION

An article appeared during the summer in the *Cleveland Plain Dealer* which emphasizes the effects of supervision and its absence on the behavior of children. The first few paragraphs are as follows:

Twenty-five playgrounds under city supervision opened yesterday with no one to take care of them and direct the children in play.

In striking contrast, the board of education also opened fifty playgrounds, all in the charge of play leaders who not only helped the children to organize their games but were instructed to see that each had equal access to swings and slides, turn and turn about.

A tour of half a dozen city and school playgrounds on the East Side presented other contrasts. School playgrounds were neatly kept, well graveled, and in good repair. City playgrounds were coated with several inches of dust; fences were broken and the grounds littered with glass, despite the fact that many of the children were barefooted.

On the city's grounds, the younger children hovered uncertainly around swings and teeters of which the older children, as a rule, had taken possession, refusing to give the smaller ones a chance to play.

Several mothers living in the vicinity of the Superior-Luther Playground, were on the ground providing the supervision the city failed to provide, protecting their own children, and attempting to prevent fights among others.

It was a playground opening, in short, without the assistance of book-bugs and uplifters. There was nobody trying to butt in to prevent the children from having a good time, except some of their own number. It met all of the conditions specified some time ago by Mayor Fred Kohler, when he said:

"You don't need any of these high-brows, book-bugs, and uplifters loafing around to teach the kids how to play, or getting in their way. Don't you suppose the kids know how to play without any help? We'll have somebody there to keep the kids from smashing up the apparatus and getting hurt, but there won't be any book-bugs."

UNIFIED KINDERGARTEN AND FIRST-GRADE TEACHING. II[1]

S. C. PARKER AND ALICE TEMPLE
University of Chicago

(3) THE OVERLAPPING OF THE MENTAL AGES OF KINDERGARTEN AND FIRST-GRADE PUPILS

Provides scientific justification for unified instruction.—Our third factor in the development of unified teaching for the kindergarten and the first grade is the large overlapping of the *mental* ages of the children in these grades as ascertained by mental tests. The scientific determination of this large amount of overlapping in mental abilities of groups of pupils from the two grades contributes important scientific justification to the unification of the curriculums and methods described.

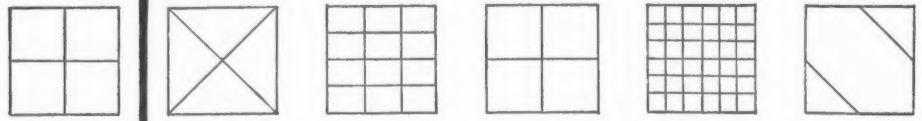
Mental ages. Precise meaning from average scores from mental tests.—The term "mental age" has been given precise meaning by the results from mental tests—tests of mental ability—which have been given to thousands of children of all ages and grades in recent years. Most readers of this discussion are probably familiar with some form of these tests, such as the intelligence tests which were widely used in the army, or the Binet tests, or some one of the many intelligence tests that are being used in schools to select the especially dull and the especially bright pupils. Special forms of these tests have recently been developed for use with kindergarten and other primary children. For example, in the Detroit First-Grade Intelligence Test a part of the form used by the examiner is shown on page 94. The form that the children use is the same minus the printed directions and the asterisks.

A sample from the Detroit Kindergarten Test is shown on page 95. This test is given individually to each pupil by the examiner, who says, in the case of Test 1, which is here reproduced, as he

[1] This is the second of a series of articles on this topic. The series will be reprinted and sold in pamphlet form by the Department of Education, University of Chicago.

Test 2

Mark the first little window. (Examiner directs and corrects.) **Find the other window like it and mark the other window. Be sure to draw the line through the picture.**



*

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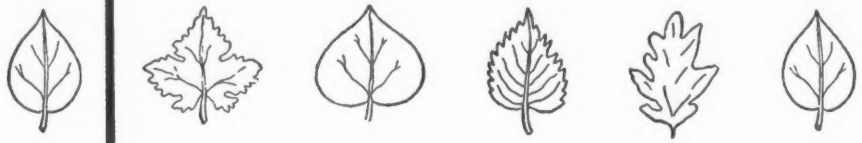
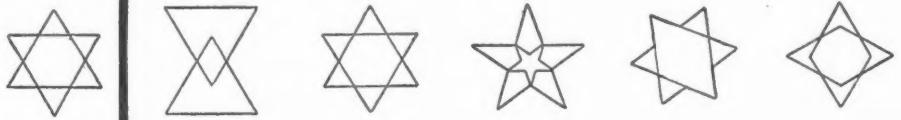
Mark the first leaf. **Now mark the other leaf that looks just like it.**



*

*

Mark the first star. **Mark the other star that looks just like it.**



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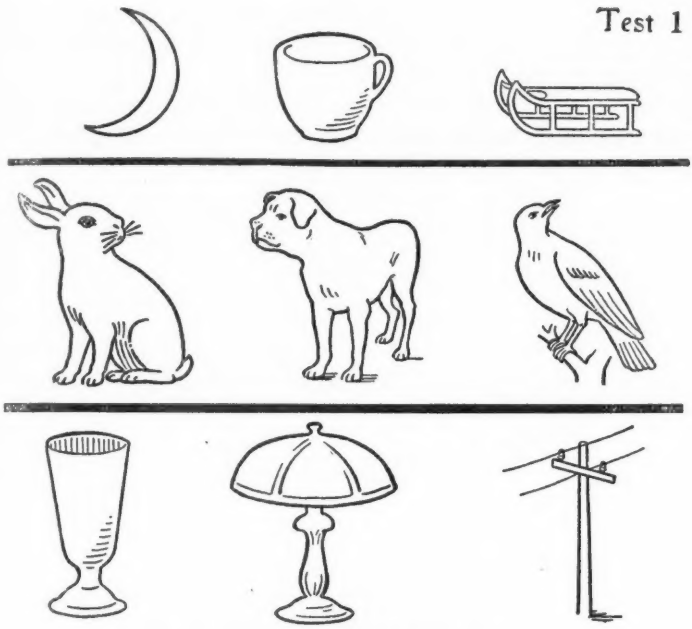
Excerpt from the Detroit First Grade Intelligence Test

points successively at each line, "Show me the thing that is up in the sky. Show me the thing that flies. Show me the thing that gives light." The examiner marks with a pencil the object or picture at which the pupil points.



Excerpt from the Detroit Kindergarten Test

The scores that pupils of a given age make on such tests may be averaged and a set of standard scores for various ages thus determined. Then, if a given pupil's total score on the test equals the average score for five-year-old children, he is said to be mentally five years of age. Chronologically, however, if he is very bright he may be only three years old; or, if he is very dull, he may be seven years of age.

Examples of overlapping of groups in mental ages.—When mental tests are given to large groups of children from the kindergarten

and the first grade, we may find that many of the kindergarten children are mentally more mature and capable than many of the first-grade children. A striking demonstration of this fact of overlapping is given in Table I, which is taken from Terman's *The Intelligence of School Children*, in which chapters iii and iv deal specifically with individual differences among kindergarten and first-grade children and provide us with some of the best information on the overlapping found there.

In comparing the mental ages of the 112 kindergarten children and the 149 first-grade children shown in Table I, it was found

TABLE I*

Mental Age	Kindergarten	First Grade
3–0 to 3–5	3	.....
3–6 to 3–11	2	.....
4–0 to 4–5	11	9†
4–6 to 4–11	24	17
5–0 to 5–5	17	14
5–6 to 5–11	17	17
6–0 to 6–5	19	21
6–6 to 6–11	16	30
7–0 to 7–5	2	26
7–6 to 7–11	1	6
8–0 to 8–5	.....	4
8–6 to 8–11	.....	2
9–0 to 9–5	.....	0
9–6 up	.....	3
Total	112	149

* From Lewis M. Terman's *The Intelligence of School Children*, pp. 31 and 46. Boston: Houghton Mifflin Co., 1919.

† These nine children are 4–5 or below. Judging from Figure 1, some of them have a mental age of 3.

that the mental ages of the former ranged from 3 to almost 8, while the mental ages of the latter ranged from 3 to above $9\frac{1}{2}$. Thus the two groups overlapped enormously in mental age, mental ability, and mental fitness for the same kinds of work. In reading the table in detail, keep in mind the fact that "3–5" means three years and five months; "3–6" means three years and six months, etc. If you will glance at the row of figures beginning "4–6 to 4–11," you will see that the kindergartens contained twenty-four children of this mental age, while the first grades contained seventeen children; that is, there were seventeen first-grade children whose mental ages were only about $4\frac{1}{2}$ years; yet the school was trying to

teach these children to read. On the other hand, the kindergartens contained from six years (mental age) upward thirty-eight (19+16+2+1) children who, in the old isolated kindergarten, would ordinarily not have been taught to read, although sufficiently mature.

Overlapping graphically pictured.—Those who can read graphs will find in Figure 1 a more vivid representation of this overlapping of the mental ages of kindergarten and first-grade children. Above each of the mental ages indicated on the base line, you will find a pile representing the percentage of cases of that age—a solid line

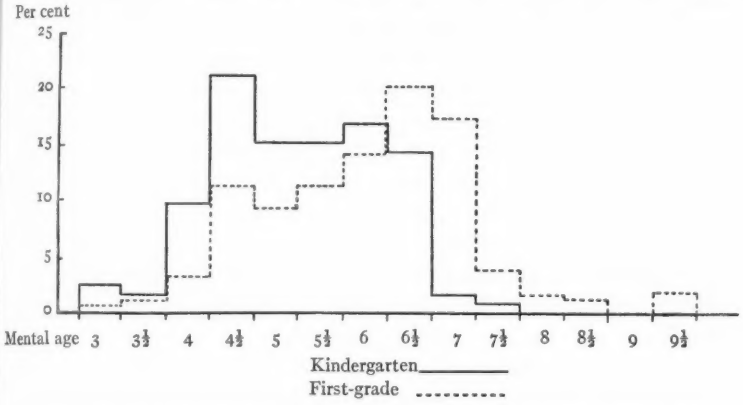


FIG. 1.—Overlapping of kindergarten and first-grade children in mental age

for kindergarten children and a dotted line for first-grade children. The highest pile, or percentage, for kindergarten children is at the age of $4\frac{1}{2}$, while the highest pile for first-grade children is at $6\frac{1}{2}$. But notice how from 5 to $6\frac{1}{2}$ the piles for the two groups overlap.

Unified instruction provides suitable intellectual training and correct social grouping.—From such data, it is clear that many kindergarten children are quite capable of doing the intellectual work of the first grade; while, on the other hand, some first-grade children have such low mental ability that they need primarily constructive activities and games, instead of such intellectual activity as reading, at which they fail. Some wee kindergarten youngsters, however, who have sufficient mental ability for reading

frequently need to be kept with children of their own chronological age for several reasons. Among these reasons are the following: (1) the legal restriction in some places which makes six the lowest age for entering the first grade, (2) the great distance to the nearest first grade as contrasted with the easy access to convenient private kindergartens, to which the mothers or teachers can conduct the children, (3) the social suitability of companions of kindergarten age and size as contrasted with the out-of-placeness of tiny pupils among larger children. Consequently, it is highly desirable to have in the kindergarten room facilities for teaching reading to the small group of children who are mentally ripe for it. Conversely, it is desirable to have in the first grade, not only for the children in general, but especially for those children of low mental ability who cannot yet succeed with reading, opportunities for motor activities, games, etc., at which they may succeed. Thus we see how the scientific ascertaining of the overlapping of the mental ages of kindergarten and first-grade children provides scientific justification for unified teaching in these grades.

Summary of overlapping in words of Terman.—In concluding our discussion of this third phase of the development of unified kindergarten and first-grade teaching, we may quote Terman as follows:

> The most abrupt break in the curriculum is that from the kindergarten to the first grade. At all other points every effort is made to bridge the gaps. The transition from first grade to second, from fifth to sixth, etc., is almost imperceptible. Even the first year of high school is rapidly being integrated with the last year of the grammar school so as to give the child an unbroken educational path which he may traverse from the first grade to the university. The kindergarten alone holds aloof, worships at the shrine of a special methodological cult, and treats its children as belonging to a different order of human beings.
>
> The tests of Dickson and Cuneo show how little justification there is for such an attitude. The fact that nearly a fourth of kindergarten children do not differ at all in mental ability from average first-grade children, and that a fourth of first-grade children are on a par with the median kindergarten child, indicates that it would be well for the teachers of these two grades to come to some kind of understanding.[1]

[1] Lewis M. Terman, *The Intelligence of School Children*, p. 32. Boston: Houghton Mifflin Co., 1919.

(4) UNIFIED TEACHER-TRAINING AND SUPERVISION

Teachers' courses in normal schools; supervisors' courses in universities.—Our fourth and final phase of the movement to unify kindergarten and first-grade education is the organization of unified teacher-training and supervision. Such training and supervision are intimately related, since the supervisors are just as much in need of training for sympathetically and skilfully supervising unified teaching as the teachers are in need of training to do such teaching. To meet both of these needs, we find many normal schools organizing training courses for unified kindergarten and primary teaching, while such advanced institutions as Teachers College of Columbia University and the School of Education of the University of Chicago have carefully organized courses for training supervisors of unified kindergarten and primary teaching. Frequently, experienced primary supervisors will be found taking these courses who previously knew nothing about kindergarten education, and vice versa.

A teacher's needs. Subject-matter, skills, devices, principles.—The preparation of a teacher for unified kindergarten and first-grade teaching calls for much detailed practical training, since the technique of teaching in these grades is so complex and highly developed. At the same time, it calls for adequate study of modern scientific facts about teaching, since so much theorizing—frequently false—is done concerning these grades. In general, such a teacher needs training in each of the following: (1) The *subject-matter* she is to teach, particularly a study of community life and nature and the phonetics of the English language. (2) Certain *skills*, such as skill in handwork, drawing, singing, games, etc. (3) The use of many *devices*, such as devices for pre-primer reading, for drill-games in reading and arithmetic, for teaching the various phonetic sounds, etc. (4) Understanding and applying the *general principles* of teaching, such as the principle that subject-matter should have real social value, or the principle that new ideas must be related to a child's past experience in order that he may understand them.

A suggested curriculum. General principles and special techniques.—In order to provide such training, we would suggest that

the normal-school curriculum for prospective kindergarten and first-grade teachers be organized somewhat as follows:

(*a*) *General courses in the department of education:*

(1) Introduction to the scientific and psychological study of education.[1]

(2) General methods and types of teaching.[2]

(3) The equipping, managing, and testing of kindergartens and first grades.

(4) Construction of kindergarten-primary curricula.

(*b*) *Courses in special subject-matters, skills, and teaching devices:*

(1) Community life: a study of homes and communities, farm life, possibly primitive life, with detailed devices for teaching the same to little children.

(2) Nature-study: a study of familiar plants and animals, gardening, plant boxes, pets, etc., with detailed devices for teaching the same to little children.

(3) Children's literature: a study of stories, poems, etc., suitable for young children and of devices for teaching these.

(4) Reading: a detailed study of the primers and manuals of commercialized reading systems, of pre-primer work, of reading for meanings, of the phonetics of the English language, of phonetic devices, of the scientific investigations of reading processes, and of practical devices for teaching every phase of beginning reading.

(5) Language, handwriting, and spelling: a detailed study of possibilities and devices in these subjects for these grades.

(6) Arithmetic: a practical study of the devices for teaching counting, measuring, simple fractions, and other arithmetical processes, together with an evaluation of the arithmetic texts suited to first-grade pupils who can read.

(7) Music: a repertoire of many songs for the kindergarten and the first grade, with teaching devices.

[1] For reading in this course we recommend C. H. Judd's *Introduction to the Scientific Study of Education* (Boston: Ginn & Co., 1918) and a rapid reading of either F. N. Freeman's *How Children Learn* (Boston: Houghton Mifflin Co., 1917) or E. A. Kirkpatrick's *Fundamentals of Child Study* (New York: Macmillan Co., 1918).

[2] For this work we have in mind such topics as are discussed in S. C. Parker's *General Methods of Teaching in Elementary Schools* (Boston: Ginn & Co., 1922) and his *Types of Elementary Teaching and Learning* (Boston: Ginn & Co., 1923).

(8) Handwork: actual practice in paper folding, clay modeling, etc., suited to these grades.

(9) Plays and games: practical mastery of a large repertoire of children's games.

(10) Drawing: practical mastery of a "drawing vocabulary" of scores of objects suitable for illustrative purposes in unified teaching, with principles and devices for teaching the same.

(11) Hygiene: scientific and practical study of the main facts about child hygiene and of the course of study and teaching devices for inculcating health habits in young children.

(12) Practice-teaching in the kindergarten and first grade, with much actual planning, assisting, and teaching.

Give practical skill in actual teaching plus scientific outlook.—In the actual administration of such training courses, we would do well to imitate the older kindergarten training courses by preparing teachers to perform the real tasks of teaching with a standardized course of study. While the old-fashioned isolated kindergarten training school was frequently narrow in its outlook upon education and frequently mistaken in its practices, it did possess the one great virtue of giving its graduates such practical training that they knew how to organize and conduct a kindergarten with practical success. Hence, while we should try to be broader and more scientific in our training courses than was the old-fashioned training school, we ought to strive to emulate it in giving students real practical skill in teaching.

Conclusion of section on the unification movement.—This will conclude our general survey of the movement to unify kindergarten and first-grade education. In tracing this movement, we see how strongly the unified program contrasts with both the old-fashioned first grade and the isolated kindergarten. Yet each of these had its strong point; the first grade emphasized the essential social skills, the tools of civilization, while the kindergarten emphasized the recreational and social possibilities found in children's expressive activities and their playful imitation of domestic and community activities. The unified program unites these two lines. It carries the playful study of social life up into the first grade, introduces playful methods of studying the essential social skills, and intro-

duces kindergarten children of adequate mental age to reading, the most characteristic of the subjects of the old-fashioned first grade. In carrying out this unified program, we secure great scientific justification and aid from the mental tests that demonstrate the large amount of overlapping in mental ages between groups of kindergarten and first-grade children. With such a definite scientific basis, plus the practical training courses for unified teaching and supervision that we find in the normal schools and universities, the outlook is bright for a rapid successful adoption of unified kindergarten and first-grade teaching.

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Mental Ages.—(7) Terman, L. M. *The Intelligence of School Children* (Boston: Houghton Mifflin Co., 1919). Chapters iii and iv deal with the overlapping of groups in the kindergarten and first grade, plus an argument for unification and for more intellectual work for kindergarten pupils of high mental ability. By the leading American authority on mental tests.

[*To be continued*]

A PLAN OF ORGANIZATION FOR TAKING CARE OF BRIGHT PUPILS

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In 1918, a teacher of junior high school mathematics in Drumright, Oklahoma, divided her class of thirty-five pupils into three groups: A, of eight pupils; B, of sixteen pupils; and C, of eleven pupils. Each group was brought to my office. The A group was composed of small, spindling youngsters, underage but bookish. The children in the B group were older by almost two years and considerably larger. They were bright youngsters; they made B grades or near that and had no great desire to do better. They were typical American children, ever ready for a good time and willing to study if necessary. The children in the C group were considerably older and larger. This group was not interested in books or in reading of any kind. On the other hand, they could do things. They were decidedly the superior group with respect to mastery of environment. Any one of them was able to support himself. They were good with tools, and half of them were not far from being expert mechanics. But they could not learn things from books. This experience led me to attack the problem of a differentiated curriculum for different types of pupils.

A little later, Eleanor M. Johnson, the primary supervisor, began to experiment by dividing first-grade classes into groups according to mentality. Each group was given a teacher. Various teachers in other grades and in the junior high school began also to divide classes. By 1920, all junior high school classes, all primary classes, and a few other classes were organized on the basis of mentality.

It seemed difficult to organize groups of different degrees of brightness in the intermediate grades, particularly on account of inadequate numbers. However, after some experimentation in 1921 the bright pupils from all of the elementary-school buildings were brought to a centrally located high-school building three

days a week for two hours a day. Some of the best high-school teachers were induced to take these classes as an experiment three days a week for six weeks. It was not always easy to find teachers who were willing to do this, who were qualified for it, and who had vacant periods in the afternoon. While giving these courses, the teachers were relieved of all extra-class activities. It was not usual for them to have a special class two consecutive terms.

In 1922, this plan of shifting pupils to the high-school building was abandoned, for we did not feel that it had solved the problem. We were convinced further that the building was the unit with which to work. By this time Floy V. Elliott, principal of the high school, and Dora Brown, principal of the Fourth Ward School, had become so interested in the organization of intelligence groups in the intermediate grades that the junior high school and the Fourth Ward School were selected to carry on the experiment.

During the last school year, 1922–23, one period a day in the junior high school and two periods a day in the ward school mentioned were set aside for a special type of work. During these periods the traditional type of organization was lost sight of. In the buildings were a group of teachers and a group of pupils whose interests and needs were to be met in the best possible manner. This necessitated having classes, not only for the bright pupils, but for all pupils. Remedial classes were organized for those who needed them. Let me illustrate this by taking a cross-section of the ward school during one of these six-week periods at the special hour. In the fourth, fifth, and sixth grades there were five teachers and about 150 pupils in average daily attendance. It so happened that the art teacher was allowed to make the first choice of pupils at this time. All of the teachers had their turn. She selected twenty-one pupils who were exceptionally good in art. Many months before she had given almost this same group a course in appreciation of art. The earlier course had been only fairly successful, the teacher doing most of the work. In the new course each pupil was put to work with brush, paint, and paper. At the close of the six-week period, the principal remarked that this group had done more than a year's regular work in art. The music teacher had next choice and selected thirty-three of the most talented music pupils. They did excellent work. The history teacher

selected thirty of the remaining group and worked out a project on the city of Washington. This class was slightly above the average in history, and one of the teacher's problems was to teach an ordinary group how to study. The English teacher came next. She selected about thirty pupils who needed sorely some remedial work in simple written English. All of the pupils left were put into the hands of the science teacher, who was young, almost inexperienced, and not very strong. This teacher realized, however, that, although her pupils were weak in arithmetic, spelling, and a number of other subjects, none of these things constituted their greatest need. Far more than these, they needed interests. She undertook to develop interests in science. She collected from the library and the system several hundred volumes of science books suitable for these grades and put the pupils to reading. She advised with them, worked with them, and discussed books with them. The class became very enthusiastic, called for many new books, and was a real joy to the teacher.

To illustrate further the development of these courses, let me tell of the work of James Brill, director of music in the high school. This is just an ordinary high school of 700 pupils. The little city of Drumright with a population of 15,000 is certainly not superior to the ordinary city of that size. Ten years ago it did not have a post office, and even now it is hardly more than a typical shack town of the oil country. In it there has never been a private teacher of voice, nor is there one now. Mr. Brill has been director of music in the high school for two years. During the last year he undertook, during this special period, to comb the high school for musical talent. It is a long and interesting story, but suffice it to say that during the spring he put on "Robin Hood" with a hundred voices. Dean Holmberg of the state university asked that it be repeated at the high-school field meet at the university. At this meet the boys' quartette won second place and the girls' quartette first place. It is fair to add that Mr. Brill used two terms of six weeks each for the training of these young people, instead of the one term that was used in all other cases.

To correct the possible impression that only the fine arts have been emphasized, let me say that more than fifty different courses have been given. Almost every department has been represented.

Some of the most successful courses were the following: building a small house, a play, magazine reading, mechanical trades, banking, "Robin Hood," good manners, scout cooking, household decoration, eugenics, sex hygiene, paper-making, dyes, Panama Canal, glues, mineralogy, hiking, the sea as a source of food supply, the reindeer, Alaska, the rat, surveying a grocery store, the local water system, Public Health Bureau, typhoid survey, parliamentary law.

The junior high school organization was very similar to that in the grades, a period each day being set aside for special work. In fact, most of the subjects mentioned in the foregoing paragraph were given in the junior high school. Of the 700 high-school pupils, fewer than 100 were taking these special courses each six-week period. During the past year, as in the grades, it was arranged for the middle groups to have supervised study. Some progress was made in giving the weaker groups remedial and drill work.

It is our experience that it is a difficult task to work out a course of study for special groups, whether bright or slow. In English, Mrs. Murray has made some progress in working out courses for the bright, the average, and the slow. In social science, Miss Langley has done some work, particularly for the slow group. When these special courses have been worked out carefully, there is a tendency on the part of the teachers to incorporate them into the regular courses for that group. We have some reasons for having faith in this method of reconstructing the curriculum.

The method of selecting pupils for these courses has changed considerably during the five years. At first, it was wholly a matter of teacher judgment. Of course, subject-matter tests assisted the teacher. By 1920, under the direction of Elizabeth Bruene, mental tests were given to all of the pupils, and since then the pupils have been selected for the special courses largely on the basis of mentality. In cases where pupils had marked ability in some special subject, they were usually admitted regardless of the mental test. There seems to be a type of ability that is specific rather than general. Such specific ability is frequently found in such subjects as music, art, and mechanics. After considerable experience with this program, I cannot bring myself to eliminate wholly the teacher's judgment. Rather do we need the teacher's judgment, a subject-matter test, and a mental test to check each other.

The teachers and principals are the key to the situation. A superintendent or other person interested in the type of program described must convince his organization of its value. Usually teachers do not succeed with it unless they believe in it. There have been a few cases where open-minded teachers did not favor the plan until after giving a course. We have only one building in which every teacher has taught a special course. That building is completely convinced of the wisdom of the program. The teachers would be greatly disappointed if it were discontinued. The pupils would be even more disappointed. I think that this program is accepted by the system and the city. I shall be greatly surprised if every building in the system does not adopt some part or all of this program this year. Certainly, I shall not urge them to do anything with it. It cannot be introduced that way.

The teachers must believe in it and make a contribution to it. My plan has been to convince the teachers. I got groups of teachers to work out some courses and to teach them. Then I discussed the matter with them again until they adopted the plan as their own. After teaching a course, they saw it in a different light. No teacher did the work justice until she gave her second course. No teacher understood thoroughly what she was doing until she had given her second course. There is a greater difference than I may be able to explain between this type of work and the work of the usual class. Pupils take the course because they want it. Teachers give the courses because they want to. They organize the material in their own way. It is prepared for a specific group of pupils. It represents that body of material through which the teacher thinks she can give to the class to the best advantage the things out of her own life and experience that will contribute most to the lives of the pupils.

In working out this program, it was not our aim to add new courses which would enable the pupil to get through school early, or to give him additional credits. Ultimately these courses may lead to the finding program, but in working them out the finding program was not dominant in our minds. It is true that many of these courses are finding in nature and that many opportunities were given to develop abilities already pronounced. The idea of a more vital experience was the dominant one.

In the early years of this work, we had in mind the saving of our bright pupils. Even Russia and Germany are giving serious attention to this problem. In 1918, Germany made liberal provision to educate the bright pupils of all classes. Great, rich, democratic America cannot afford to neglect her future leaders. As this program developed, it naturally extended to other types of pupils.

In general, we proceeded on the assumption that any body of instructional material is valuable in the life of a specific group of pupils, provided it lends itself to organized presentation to the class, provided there is a teacher available who is master of that body of material and interested in it, and provided, further, that there is a group of pupils interested enough in the teacher and in the material to enrol in that class.

In conclusion and by way of summary, let me add that we are a poor school district and that we have spent very little money on this program. In the ward school, the school day is the usual length. The usual day's work is completed earlier. For the remainder of the day, the middle and the slow groups have drills, reviews, supervised study, remedial courses, and just the ordinary instruction which such pupils need in any school. In so far as is possible for a period of six weeks, pupils are thrown together to study some part of a subject which every member of that study group needs. Eighty per cent of these pupils study the subject-matter that is taught in all schools and for as many hours each day. The organization is changed slightly in order that the bright pupils may have an enriched curriculum without additional cost, additional teachers, or extra hours on the part of the teachers. During this period one teacher takes care of the bright group, and four teachers take care of the other groups. The organization is somewhat the same in the high school, except that the teachers are relieved of outside activities while giving special courses.

BRIEF HISTORY OF ART EDUCATION IN THE UNITED STATES

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A review of the history of art education in the public schools of the United States throws light on the general trend of such education from its introduction into the school system to the present time.

Art education was a thing practically unheard of two centuries ago. It was, however, advocated by no less an authority than Benjamin Franklin in 1749 in his *Proposed Hints for an Academy.* In 1821 art instruction of a very primary character was introduced into the public-school curriculum, but the movement met with much opposition and many reverses. During the next forty years art work was introduced into the city schools of Philadelphia, Baltimore, Cleveland, and many other cities in the east. Massachusetts was the first state to adopt art as part of its general education program. The initial step was taken in 1860. In 1870 provisions for art instruction throughout the commonwealth were made in the laws of the state.

Art work was advocated by Rembrandt Peale of Philadelphia in 1840 as a form of graphics—the art of accurate delineation, a system of school exercises for the education of the eye and the training of the hand, an auxiliary to writing, geography, and drawing.

William Minife, of Baltimore, in 1848, advocated art as a training in taste for all pupils and as a means of discovering art talent for use in the industries. A paragraph taken from one of the early writings of this author sets forth his ideas:

> To get good designers we must take the proper means for educating, and if we should make drawing a branch of common-school education, we should have an opportunity of selecting those who evidence superior talent for the art and at the same time, by improving the taste of all, we should create in

many an appreciation of the beautiful, and consequently very much extend the consumption of art productions.[1]

Drawing was introduced in Massachusetts primarily as a means of contributing to industry, as is stated in the early reports on art education from the state—"to so influence industrial products that this article of manufacture would compare favorably with foreign goods."

A broader motive for art teaching appeared in the early eighties, as is apparent from a report on school art in Boston, dated 1882.

> Art education, even for little children, means something more than instruction in drawing. It comprehends the cultivation of the eye, that it may perceive form; of the hand, that it may represent form graphically (drawing); of the mind, that it may receive and express ideas in regard to form. It would seem appropriate, then, that these lessons should be called "form lessons." Teachers should consider them as such, and should direct their teaching to creating in the minds of their pupils a correct conception of simple forms, rather than to giving instruction merely in drawing.

It is interesting to note that some of the art instructors in these early times, in writing about art instruction, held views similar to those which we embrace today. Thus, in the words of one commission, "the instruction is to be varied and rational, the aim being not to make proficients in any one thing, but to impart a taste, a knowledge, and a skill of universal utility."[2]

It is evident, however, that such phrases as those used in the foregoing quotation were not interpreted in 1876 as in 1923. Furthermore, we can draw the conclusion from the reports of the early exhibitions of school work that there was little system or organization and much hit-or-miss method in these first attempts.

Art education has made marked progress since its experimental introduction into the public schools in 1821, but a reliable history of the movement is difficult to obtain because of the lack of adequate printed reports and accurate data on the subject. A fairly comprehensive idea can be obtained of the development of art teaching in the United States by studying the reports of the various

[1] Royal Bailey Farnum, *Present Status of Drawing and Art in the Elementary and Secondary Schools of the United States*, p. 14. Bureau of Education Bulletin No. 13, 1914.

[2] "Records and Awards," *Report of the United States Centennial Commission, 1876*, Vol. VIII, p. 28. Edited by Francis A. Walker.

large expositions of the country where public-school art work has been displayed.

The art exhibit of the Massachusetts public schools at the Philadelphia Centennial Exposition in 1876 created great interest. This work was characterized largely by straight- and curved-line drawing, geometric forms and designs, perspective, objects in outline, and light and shade.

Art instruction developed rapidly in the schools from 1876 on, becoming less formal and geometric, and was just awakening to the possibilities of color teaching when the World's Columbian Exposition at Chicago (1893) opened and gave to the country the greatest stimulus for art that it had yet received. At the same time there was improvement in paper, paints, crayons, pencils, brushes, and all materials and methods. As a result, we find art making great strides in the schools. However, the introduction into the schools of these new materials for the teaching of art caused the interest in the development of new methods and ways of handling the materials to dominate the course of study. The objective seemed to be to expand the possibilities of the newly introduced agencies for art teaching to the very limit. The evaluation of the practicability of this work for the student seems not to have been considered at all.

Teachers of art during this period were dependent on commercial houses for their supplies and equipment for art work. They were also dependent on these commercial houses for much of the incentive for teaching the subject, for subject-matter for courses, for copy-books, and for numerous other aids. It was inevitable under such conditions that publishing and school-supply houses, having discovered a rich field for exploitation, should dominate the work of art education in the public schools for many years. We realize fully that a great contribution has been made to the furthering of art work in the public schools by supplying material and equipment which otherwise would not have been available. We acknowledge the debt. However, art education has reached the point in its development where its aims and policies must be determined, not by commercial interests, but by scientific educational research.

Following the World's Fair, art teaching soon tended toward "art for art's sake" and passed into an extreme from which we are

reacting today in the schools. Art instruction has swung from one extreme to another, and at the present time seems to be emphasizing applications to industry as it did in the early days when it was first introduced. Let us hope that it will soon reach a middle ground of efficiency and stop there.

At the St. Louis Exposition in 1904, the so-called Arts and Crafts Movement made its appearance, and the co-ordination between art and manual training became apparent. The Jamestown Exposition (1907) shows the art and manual training teachers united in the endeavor to produce worthy industrial art products. The San Francisco and the San Diego Expositions (1915) show a still closer relation between art and industrial education. Objects were made with a definite practical use in view, demonstrating the union of beauty and utility, art in common things and for the masses.

Today the stress is more on the practical than ever before. This tendency may have been quickened by the war; however, it is becoming extreme. Even extreme emphasis on industrial applications may be regarded as better than an extreme tendency away from such practical forms of art. At any rate, it is better than the old method of wasting time on formal exercises with no objective. On the other hand, courses that fit the pupil for the practical alone are not broad enough. This work must be supplemented with mental training and art thinking, art judgment, and art appreciation.

We are rapidly learning to think of art work, drawing, construction, design, etc., not as a special subject, but as an integral part of a well-organized curriculum in the public school. Without art there is an incompleteness that nothing can overcome. Through correlation and efficient co-operation, art work becomes a "helping hand, a kind of connecting link that binds all subjects to it and makes every study at school more interesting and valuable."[1]

The chart on page 113 is designed to show graphically the trend of art education in the United States since its introduction in 1821. The vertical lines in the center are intended to represent the "happy medium" of art training, a type of art training of equal value to

[1] Louise D. Tessin, "The Old Order Changeth," *School Arts Magazine*, XXI (March, 1922), 394.

GRAPHIC HISTORY OF ART EDUCATION IN THE PUBLIC SCHOOLS OF UNITED STATES

all pupils in the public school no matter what their future vocations may be. The serpentine line, fluctuating from one objective of art training to another, suggests where emphasis has been placed in art teaching up to the present time. Reports describing public-school art work shown at the various expositions held in this country have been the basis for the plotting of this line. The curved line crosses the vertical lines in the center in two places. This does not mean that art work of equal value to all pupils was taught at these points.

It will be observed, however, that the curve seems at the present time to be swinging back toward the "happy-medium" type of art work of value to all pupils. The formulation of a course of this nature is the problem of workers in the field of art education today.

Such a course of study in art for the elementary school and for the first two years of the high school seems to be developing in many progressive schools. In the last two years of the high school elective courses of a semi-specialized or prevocational type are being offered, leading to the fine arts or to the industrial arts for students desiring to specialize in these subjects.

A modern program of art education for the elementary school comprises a background of art appreciation and sufficient technical work to enable the pupil to secure the fundamental facts and information in art which will equip him to meet the art problems of everyday life, to appreciate and enjoy worthy works of art, and to know and appreciate the beauties of nature to the fullest.

A program of this type should bring the child into full possession of his inheritance as a member of a cultured and refined civilization. It should give him an understanding of the finest art of past times and a knowledge of the best in modern art. It should bring to him a realization that real art may exist in the common things of everyday life. He should be trained, not only to judge art quality with authority, but also to produce art quality effectively in his environment, whatever that may be.

In order that the capacity for understanding and appreciation may be enriched, carefully planned exercises in drawing, design, and construction (industrial arts) should be carrried out in co-ordination with the course. Such exercises may be motivated

by the lessons being presented in the appreciation course. For example, students making a study of pictures may be given exercises in drawing and color work; students studying sculpture may be given exercises in modeling; and students studying ceramics, furniture, or textiles may be given problems in pottery, wood construction, or weaving; while students studying interior arrangements may be given problems in home-planning and decoration. Similar exercises may be developed to cover a wide field. Work of this type may be considered to be real art work. Courses in appreciation with no expression or construction are not art courses. Appreciation without expression is not art, but a by-product of art. Combining appreciation and production in the art course vitalizes the work and gives to it a real practical and usable basis.

The recognition of the modern dual objective of appreciation and practical understanding of art quality as a basis for public-school art work is the most promising tendency art education has exhibited since its introduction into the school system in 1821.

All of the recent tendencies in art education require considerable reorganization of art courses and methods of presentation. Specially trained teachers and supervisors with a broad educational outlook are needed for this work.

The day is past when principals and superintendents of public schools can expect to secure good results in art work from indifferently trained teachers. The art teacher, in order to secure maximum results, must be a trained educational specialist as well as a trained artist. She must have the educational point of view, must understand lesson-planning and proper methods of presentation, and must be competent to conduct efficiently the work of the classroom.

Art education today requires a great deal of correlation, making it necessary for the art teacher to be something vastly more than an artist. In fact, she must be trained in the entire educational program of the school. She must possess a great body of facts and information pertaining to the domestic, social, and industrial affairs of life. Art teachers and supervisors possessing qualifications along the lines suggested will be able to accomplish a great deal for art education during the next few years.

THE COURSE IN NATURE-STUDY AND SCIENCE IN THE UNIVERSITY ELEMENTARY SCHOOL. I

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Instruction in nature-study and science is a definite part of the curriculum of the kindergarten and of each of the six grades of the University Elementary School of the University of Chicago. The purpose of the series of articles of which this is the first is to give, not a detailed outline of the subject-matter of this course in nature-study and science, but rather an idea of the contributions which we think the course makes, of the criteria on which the selection of units of subject-matter for the course is based, and of the method of treating such units of subject-matter as are selected. This first article has to do with the aims of the course and with the general methods used in attempting to realize these aims. Subsequent articles will deal with the criteria we use in selecting or preparing reading material with which to supplement the children's first-hand experiences and with the organization of the course throughout the grades. A detailed account of the treatment of a few units of subject-matter will be given.

The chief purpose of the course is to enable each child to build up a fund of concrete, varied, and rationalized experiences within the fields of the physical and biological sciences. The course is distinctly on the experience-getting level.

Science has to do with the child's material environment. As one of the important steps in building up a fund of science experiences, the child's attention is directed toward the things and forces which surround him. The idea of the course is not so much to train his powers of observation as to direct them. Similarly, the course is designed not so much to create an interest in science as to provide opportunities for the child's natural interests in science to manifest themselves and thereby to develop into permanent inter-

ests. Since the field of science is so wide and its content so varied, we must speak of interests in science rather than of an interest in it. The course in the University Elementary School has been planned with these various interests in mind. The interest in any given topic in the course seems to be due to the fact that it offers an opportunity for one or more of the following inherent interests to manifest themselves.

One interest is that in manipulating materials and in seeing what will happen as a result. The very word "experiment" makes a strong appeal to children of the elementary-school level. No better evidence of this interest in manipulating materials is needed than the popularity of the various toy chemistry sets now on the market. In such units as those dealing with electrical communication, with magnets, and with conduction of heat, the University Elementary School course provides opportunities for purposeful manipulation of materials.

There is, too, the interest in finding answers to multitudinous questions: Why did this happen? How does this work? What is this good for? The interest in plants and animals is in part curiosity concerning their behavior. A child watching an animal is likely to ask: What is he doing? Why is he doing it? How does he do it? Since every unit in the course is a body of content material, each unit contributes something toward satisfying the child's curiosity concerning his material environment. The course, moreover, concerns itself with developing certain principles which the child can use in interpreting the scientific phenomena he observes.

The interest in science is partly an interest in learning names of things, in being able to call by name the birds one sees, the trees one passes, the pieces of apparatus one comes across. The interest of children in mere names of things and their ability to remember names of things are probably somewhat overestimated. It is significant, in view of the fact that identification of weeds finds its way into many elementary science courses, that, when children weed their gardens, the question is: Is this a weed? It is almost never: What weed is this? It would seem that children are interested in learning the names only of things that interest them.

Although in the University Elementary School course identification is seldom, if ever, regarded as an end in itself, although names are taught only as they are necessary tools in discussing a given body of content material, the various units do afford an opportunity to learn the names of the things which surround us.

Certain things with which the science course deals make an aesthetic appeal. This interest in the beautiful manifests itself in the study of trees and birds and flowers. We take care to present these materials which make an aesthetic appeal as nearly as possible in their natural state. Dried and preserved specimens of plants and animals have, we feel, practically no legitimate place in science teaching in the elementary school.

The science course offers, too, an opportunity for the interest in creative work to manifest itself. Gardens are made, and various toys which illustrate scientific principles are built.

A further aim of the course is to provide for the building up of a fund of interesting science experiences in such a way as to develop, to some degree, a scientific attitude of mind, to give some idea of a scientist's method of attacking a problem. The children grow in ability to withhold judgment until there is a basis on which to form a judgment. They gain in power to recognize and clearly define a problem. They become familiar with the tools which may be used in solving such problems as arise: first-hand observation, interpretation of graphs and pictures, reading, and experimentation. Problem-solving is in no way peculiar to science teaching. The contribution which the science course makes to the technique of problem-solving is in the command that it gives of the tools of first-hand observation and experimentation.

Two illustrations will serve to show the extent to which we may expect the scientific attitude to be developed in children of the elementary-school level.

The fourth-grade class had begun the study of bacteria. The children had been telling what they knew about bacteria from previous experience. Since much of the popular reading material concerning bacteria deals with harmful bacteria, it is natural that the contributions of the children should have dealt with harmful bacteria. One child in the class said, "Wouldn't it be wonderful

if some scientist found a way of killing all of the bacteria in the world?" "How many of you agree with John?" the teacher asked. No one did. "Why not?" "That would depend on whether there are any bacteria that help us," was the answer. The ability to say "That depends" when all of the evidence that has been presented points definitely in one direction is a real step in acquiring a scientific attitude.

The sixth-grade class was studying magnets. One child raised the question of how a permanent magnet could be made. Although the teacher in charge had not intended that magnets should be made as a part of that day's lesson, it seemed to be the right time to do this. One boy in the class volunteered to show how it could be done. He rubbed the steel knitting needle with which he was provided in one direction with one pole of a permanent magnet and then tested the needle with iron filings to show that he had magnetized it. When he showed that the needle was a magnet, one small girl in the class said, "That doesn't convince me of anything. You didn't test the needle before you began the experiment. It may have been a magnet when you started." Perhaps we should not expect that every member of a sixth-grade class will have the scientific attitude of mind developed to such a degree that an error in technique of this sort can be detected, but at least we may expect it in some children, and we can encourage it.

It goes without saying that the gradually increasing fund of experiences with science materials and phenomena should bring with it increasing ability to read intelligently books about science and science articles in magazines and newspapers. The University Elementary School course aims to enable children, to a slight degree, to evaluate this popular science material. An attempt is made to develop something of a critical attitude. To illustrate: When the fourth-grade class was studying the solar system, one child brought *The Story of Mankind* to class to show the representation of the solar system which serves as a frontispiece in that book. The class immediately began to point out the picture's very obvious inaccuracies, and the teacher encouraged them to do so. An adult realizes that Mr. Van Loon was making no attempt to be accurate. However, one is justified in allowing a class to criticize the picture

severely because it is essentially untruthful. The impression it gives is one of chaos, not of order.

As the fund of science experiences is built up, we try to give, also, some notion of the part which science plays in the world today, some notion of the progress we have made in our manner of thinking since the time when myths, offered as explanations of their environment, satisfied people.

Science differs from other content subjects of the elementary-school curriculum in that it deals so largely with actual materials. Much of the experience with science materials, we think, should be first-hand experience with materials themselves. Teaching a class how to wire a house for a door-bell, as a first lesson in electricity, without the necessary apparatus, is obviously absurd. A unit on fish with no fish in the aquarium is equally so. When the actual materials needed for such a topic cannot be had, we substitute a topic which provides for first-hand experiences. However, it would be a great mistake to limit children's experiences within any given topic to first-hand experiences. Their experiences can be much broadened by the judicious use of pictures (slides, moving pictures, and prints have each an important part to play in science instruction) and reading material. In the unit on magnets, for example, electromagnets are used in lifting nails and iron filings. A movable derrick is built of Meccano, and the electromagnet is attached to an electric motor so that the iron filings and nails can actually be moved from place to place on the desk. Ways are found of varying the strength of the magnet. With this experience basis, children can explore further by means of pictures and reading. Pictures are shown of electromagnets as they are used in various industries. The class reads "The Magnet as a Useful Wizard" and similar references to broaden their experiences with electromagnets.

Again, in the unit dealing with rocks as records of the earth's history, striated rocks and granites are discussed as evidences of glaciation and vulcanism, respectively. Samples of striated rocks and of granites can be provided in the classroom, but experiences with glaciers and with volcanoes must be given through pictures and reading material.

The question has been raised as to whether children gain more of an understanding of the scientific method of attacking a problem

by trying to solve a problem for themselves or by reading of the ways in which famous scientists have solved problems in the past. We make no attempt to use one method to the exclusion of the other.

It is obvious that, if it is worth while to encourage the development of a scientific attitude of mind, it is imperative that a class never be asked or permitted to draw a conclusion when there is not sufficient evidence on which to base this conclusion. One usually finds a fourth- or fifth-grade class all too ready to generalize that all substances expand when heated and contract when cooled after three experiments—one with a metal, one with a liquid, and one with a gas. When a conclusion based on insufficient data is incorrect, there is no temptation on the part of the teacher to let it stand. When, however, the conclusion is correct but not enough evidence has been presented to warrant it, it is much more of a temptation to allow the conclusion to pass unquestioned. Nevertheless, allowing a class to conclude that all green plants manufacture carbohydrates out of carbon dioxide and water from an experiment showing that a geranium does so is just as poor training in scientific method as if the conclusion were wrong. We make a particular effort to avoid this error.

Much of the content of the course lends itself well to the problem-project type of organization, although no effort is made to use this type of technique for every topic. Wiring a house for a door-bell, making a model of the solar system to scale, making a thermometer, furnishing blooming bulbs for every room of the University Elementary School, and caring for a hen and chickens are examples of projects which form a part of the course.

It has been pointed out that one contribution which the science course makes to the technique of problem-solving is the familiarity it gives with experimentation. Experiments are used for three purposes: to raise problems, to aid in the solution of problems, and to check conclusions.

The following is an example of an experiment used to raise a problem. Three tumblers of water were standing on the teacher's desk when the fourth-grade class entered the room. The water in tumbler A was very warm, that in tumbler C cold, and that in tumbler B exactly the temperature of the air in the room. One

child was asked to put his hand first in tumbler C, then in tumbler B, and then to write on a slip of paper how the water in tumbler B felt. A second child was asked to put his hand first in tumbler A, then in tumbler B, and then to write on a slip of paper how the water in tumbler B felt. The two slips of paper were then held up before the class. One said "Warm"; the other, "Cold." Since the two did not agree, other children were asked to tell whether the water in tumbler B was warmer or colder than the air in the room. They were unanimous in declaring it colder. The teacher then asked whether or not there was any way of checking their decision. The class suggested using a thermometer. The thermometer showed that the temperature of the water was exactly the same as that of the air in the room. Many thermometers were used with the same result. From this disconcerting evidence, the problem arose of why a thermometer can tell temperature more accurately than we can tell by feeling.

The following experiment is one used in the solution of a problem. The problem under discussion was that of why a Thermos bottle keeps hot things hot and cold things cold. To solve this problem the class must know something about the conduction of heat. A marble was fastened by means of paraffin two inches from the end of a piece of copper wire. Another was fastened two inches from the end of a piece of iron wire of the same diameter as the piece of copper wire. A third marble was fastened two inches from the end of a piece of glass tubing. The tips of the copper and iron wires and of the glass tubing were held in the flame of a Bunsen burner. The marble fastened to the copper wire was, of course, the first to drop, the one on the iron wire the second. Although the end of the glass tubing became red hot and melted, the marble did not drop from the glass in the ten minutes given to the experiment. This experiment shows that heat can travel through substances and that it travels more rapidly through some substances than through others. It is one step in the solution of the problem of the Thermos bottle.

The following experiment is one used to check a conclusion. The problem on which the class was working was that of finding a way of connecting one cell, one bell, and two push-buttons so that

the bell would ring when either push-button was pressed. Each child in the class made a plan on paper to show how he thought this could be done. The class had had, of course, previous experience with connecting a bell, a cell, and one push-button. Many plans were alike. One example of each type of plan was put on the blackboard. The class then discussed each plan and decided whether or not it was satisfactory. The teacher neither approved nor disapproved any decision the class made. Materials were then provided for testing the plans. Thus, by experiment the class was able to test the conclusion at which it had arrived.

The experiments which are most significant in giving children a notion of the way in which a scientist attacks a problem are those which the children plan for themselves. In the fifth-grade class the question arose of what could be done to prevent things from molding. "Let's have an experiment to see when molds grow best," a member of the class suggested. The class proceeded to plan such an experiment. Previous experiences with green plants and with yeast plants led the pupils to decide to vary the factors of temperature, light, moisture of the substratum, and movement of the air. Bread was used as the substratum. Spores of Mucor were used to inoculate the bread so that the element of chance which would be present if spores from the air were counted on to inoculate the bread would be eliminated. The experiment was planned by the class so that one factor at a time was varied while the others remained constant. The conclusion drawn was that Mucor on bread grows best where it is warm and dark, where the air is still, and where the bread is moist but not too wet. Various authorities were then consulted to find out whether or not other molds on other materials grow best under these conditions and whether or not there are other conditions affecting mold growth.

Attempts are made in various ways to provide for individual differences. After-school classes are one way of providing for individual differences. Those children who are especially interested in science because of their interest in construction have an opportunity to satisfy that interest. Every year after-school classes are offered in order that the children who wish may carry on additional construction projects. Membership in these classes is

entirely voluntary and is open to the children of the fourth, fifth, and sixth grades. The following are among the construction projects which were completed in the after-school classes last year: (1) making an electromagnet and switch; this, of course, involved a study of good and poor conductors of electricity, magnets, circuits, etc.; (2) making and using siphons, lemonade straws, and pipettes of glass tubing; this involved a study of the conduction of heat and of air pressure; (3) making balancing toys; these have to do with gravity; (4) making magnetic boats; this involved a study of magnetic attraction and of the ways of making a permanent magnet; (5) making periscopes; (6) making telegraph sets.

Other ways of providing for individual differences may be illustrated by the following provisions made in the units dealing with electricity. Included in the course are certain optional exercises such as the making of a burglar alarm and the wiring of a two-station telegraph line with a relay at each station. Children who have completed the required exercises and have met the required standards of penmanship and English in recording these exercises are allowed to do one or more of these optional exercises. Moreover, a set of short exercises which comes at the end of the series of units dealing with electricity makes further provision for individual differences. This set of short exercises is designed to serve four purposes: (1) to give added practice in manipulating materials (children are asked to repeat for themselves experiments originally performed as demonstration experiments), (2) to serve as a check on the child's grasp of the subject-matter presented, (3) to give opportunities to apply in a new situation the principles learned in one situation, and (4) to test the child's ability to interpret such symbols as are commonly used in diagrams having to do with electrical connections. Enough exercises are provided to keep the most rapid and accurate workers of the group occupied for approximately four one-hour periods. Each child is given first those exercises which furnish the type of training which it is thought will be most beneficial to him. For example, if he lacks skill in handling apparatus, he is first given the exercises which call for the manipulation of materials. If his skill is sufficient and his grasp of the work done by the class is unquestioned, he is limited to the exercises which

call for the application of principles in new situations until these exercises have been satisfactorily completed. Thus the less rapid workers of the group who are not able to complete the entire set of exercises in the given time complete those which are most important for them. Somewhat similar provisions are made in other units.

Some children are particularly interested in the materials which make an aesthetic appeal. Certain children are interested in birds to the extent that they wish to tell every day the birds which they have seen since the previous class period. Certainly nothing should be done to give the impression that we do not expect this interest to be a permanent one. It is very easy, however, to fill an entire class period with such reports, the value of which is slight as compared with what might be accomplished during that period. We used the following device to allow the children who are particularly interested in bird recognition to manifest that interest. On the bulletin board at the back of the room a sign was printed, saying, "Birds We Have Seen this Spring." Below the sign small pictures of about fifty common birds were mounted. Attached to each picture was a strip of ruled paper. Each child was allowed to sign his name beneath the picture of each bird which he saw. The children were permitted to come at any free period to sign their names. Since no comparison was made of the numbers of birds individual children had seen, there was little temptation to sign for birds they had not seen. We use similar devices for recording wild flowers and constellations seen.

Individual differences are further provided for by keeping in the science room books and magazines dealing with science so that the more rapid workers will have the opportunity offered by reading to broaden their science experiences.

The very flexibility of the course throughout the entire six grades is a provision for differences, not between individual and individual, but between group and group.

[*To be continued*]

THE TEST-STUDY METHOD VERSUS THE STUDY-TEST METHOD IN SPELLING

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There was a time when, because of lack of scientific data, school people believed that proficiency in spelling was dependent on the time given the subject in the daily program and that such proficiency was measured by the ability to spell such words as phthisis, anthropomorphism, schismatic, etc. By these standards, our ancestors of the spelling-school days far outclassed the boys and girls of today. A new social condition, however, makes it necessary to conserve the time of children, and scientific research has established the relative importance of words on the basis of their practical use.

This paper attempts to direct attention to the great waste of time which results from the method still commonly used in teaching spelling, namely, the study-test method, and to explain a plan which has as its ideals, first, the saving of 90 per cent of the time now spent in study; second, the revival of life and interest in the spelling period; and, finally, general improvement in spelling ability.

Most school programs provide for a daily study period for spelling of at least fifteen minutes in length. Where such time is not provided, the pupils are required to take their spellers home. Under the plan of study in school, all of the pupils study all of the words of the lesson under the direction of the teacher. In schools suffering from the "home-study disease," the teacher assigns the lesson and trusts the fathers and mothers to do the highly technical, professional teaching. The result in either case is that the good, conscientious pupils spend too much time, and the others too little time, on the task. Either plan is inefficient, destroying interest, incentive, and advancement in good and poor alike.

The test-study method is the plan by which the pupils study only those words which they cannot spell. They have the recitation

first and the study period afterward. When the plan is carried to the extreme as a time-saver, those pupils who have superior scores for a week, a month, or a term, are excused from the whole spelling exercise for a like period. This saves time, not only for the pupil, but for the teacher, concentrating the teacher's efforts where most needed. There are pupils in any grade above the fourth who can spell, without study, practically every word in the spelling assignment of the next grade higher. Why should they study for a year that which they already know?

The observations here recorded are based on work with three texts; they cover a period of two years of careful analysis in Grades V to VIII in two schools, with occasional class averages from four other schools. On such a limited foundation, generalizations would be dangerous, but the facts are interesting. Is it true that a boy can actually get a higher mark without study than he gets after the mechanical study of a spelling lesson? An experiment of this kind leads one to wonder why we follow old devices without proof of their value.

In October, 1921, a sixth-grade teacher, in desperation over the low average of her spelling marks, promised to try the test-study method for one month. The results were more than surprising; they were almost unbelievable. Half of the pupils rarely had any lesson to prepare, and no one ever had to prepare the whole lesson. The approach to the period was delightful. The better spellers were keen to see if there were any words that they could not spell, and the others were glad to try to surpass their record of the previous day and thereby reduce their study assignment. Never before had they really enjoyed the spelling period. In the month they moved from sixth—lowest—place in daily class average to third place and showed the largest percentage of gain of any grade in the school. At the end of the month the eighth grade and one of the two seventh grades joined the sixth grade in trying the scheme. A fifth grade and a seventh grade were kept at the old plan to act as checks on the results of the other grades. The following year, three grades in another school, each using different texts, one grade with no text in the pupils' hands, joined in the experiment with the same remarkable results in every particular.

The average class distributions, based on the average number of words misspelled in daily recitation for a year or more, are shown in Table I. The records cover three to six classes of each grade about equally divided between the test-study method (*a*) and the study-test method (*b*). The results show some slight advantage in favor of the new method in daily records, while they emphatically indicate that the time spent in class study periods was wasted.

TABLE I

Grade	Number of Words Misspelled													
	0		1		2		3		4		5		6	
	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)
V	20	12	7	10	4	5	2	4	1	2	....	2	....	....
VI	21	23	7	7	1	4	2	3	....	1	....	1	....	....
VII	16	10	8	8	4	6	2	4	1	2	0.5	....	0.5	....
VIII	17	15	8	5	4	6	2	3	....	....	....	....	....	....
Total	74	60	30	30	13	21	8	14	2	5	0.5	3	0.5	....

Roughly grouping the totals for the test-study method, one finds that 55 per cent of the pupils missed no words; 25 per cent missed one word; 10 per cent missed two words; 5 per cent missed three words; 1 per cent missed four words; and 1 per cent missed five words. To ask these pupils to spend a fifteen-minute study period on the lesson, before testing, would be to waste nearly 95 per cent of the time and, in some cases, actually to reduce the spelling ability. For a class of thirty, figured as a business manager keeps time, 425 minutes of the aggregate 450 made no return.

The question of actual comparative achievement as a final test of the two spelling methods is not answered by the daily records tabulated. Variations in texts, methods of procedure in study and recitation, and differences between teachers and grades introduce a number of elements of unreliability. To secure a more accurate estimate of achievement, Ayres Measuring Scale for Ability in Spelling was used for monthly tests. Table II shows the results. As in Table I, the averages of the classes using the test-study plan are in the (*a*) columns; the averages of the classes using the study-

test plan are in the (*b*) columns. In some cases classes changed from the old plan to the new plan. The words selected for the test, twenty each time, were of standard difficulty, giving 79 per cent as the class average. It would have been much better to have used 69 per cent as the standard.

TABLE II

Grade	October		November		January		March		May	
	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)	(*a*)	(*b*)
VIII	.....	74	.....	84	.....	86	95	.....	93	.....
VIII	.....	80	.....	.....	92	.....	.....	.....	.....	.....
VII	.....	82	86	.....	89	.....	90	.....	95	.....
VII	.....	76	.....	86	.....	82	89	.....	93	.....
VII	.....	87	.....	.....	.....	89	.....	.....	.....	.....
VII	.....	80	.....	.....	.....	.....	.....	89	.....	.....
VI	.....	82	.....	84	.....	88	.....	91	.....	89
VI	.....	74	89	.....	91	.....	.....	.....	.....	.....
VI	.....	78	.....	.....	.....	.....	.....	88	.....	.....
V	.....	74	.....	72	81	.....	93	.....	92	.....
V	.....	83	.....	.....	.....	89	.....	.....	.....	.....

The figures in Table II, studied both horizontally and vertically, lead to the following conclusions for the cases recorded: (1) the grades using the test-study method show much better gains in class average; (2) the general average for the grades using the test-study method is somewhat higher than that of the grades using the study-test method; (3) the suppositions, founded on Table I, are proved correct.

Standardized tests make possible a study of methods through the accurate measurement of accomplishment. Such measurement is true in its findings; eliminates some time-honored, time-wasting classroom practices; and appeals to teachers and school executives.

THE RELATION BETWEEN PHYSICAL AND MENTAL DEVELOPMENT

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It is a generally accepted fact that the norms in physical development for children of the same age differ with the sex. At adolescence, girls are found to be about two years in advance of boys. Differences in the development of the bones of the wrist are shown in greater or less degree at all ages studied. It has been assumed by some students of the subject that the differences in mental development parallel those which appear in physical development.

A unique opportunity to study the relation between physical and mental development appeared in the course of certain measurements made in the case of twins, brother and sister, in the University Elementary School of the University of Chicago.

Ben and Beth are twins. They were nine years old and near the end of their third year in school when their cases were studied. They have advanced without repeating grades and are now doing the same school tasks with varying degrees of success, as measured by the tests used in the school.

The dissimilarity in personal appearance is striking. A stranger would not be likely to identify them as belonging to the same family. Ben is a decided brunette, with curly hair and a tendency toward overweight for his height, is very deficient in muscular co-ordination, and is very slow in physical reaction. Beth is a decided blonde, with straight hair, and is slightly underweight. She appears delicate and has lost considerable time from school on account of sickness. She does not exhibit the muscular inco-ordination that her brother does and responds in a normal way as to reaction time.

When seven years old, the children were given the Stanford Revision of the Binet-Simon Test. Ben's I.Q. was 112, and Beth's was 119. In the six-year test, No. 1 (distinguishing right and left), Ben failed, and Beth passed. In No. 5 (knowledge of coins), Ben

passed, and Beth failed. In the seven-year test, No. 2 (description of pictures), Beth gave a very meager description, barely passing, while Ben gave a full and interesting description with some interpretation. In No. 6 (copying diamond), Ben failed, and Beth passed. In the eight-year test, No. 6 (vocabulary), both failed. Ben had credit for sixteen words, Beth for fourteen. In the nine-year test, No. 1 (date), Ben failed, and Beth passed; No. 2 (weights), Ben passed, and Beth failed; No. 3 (making change), Ben passed, having two right, and Beth failed, having one right; No. 4 (repeating digits backward), both failed; No. 5 (three words in a sentence), Ben gave only one, and Beth passed, giving two; No. 6 (giving rhymes), Ben gave none, and Beth passed, giving two. Ben excelled in knowledge of coins, in making change, in describing pictures, in vocabulary, and in judging weights. Beth excelled in distinguishing right and left, copying diamond, giving date, giving sentence with three words, and giving rhymes.

More recently other tests were given, the comparison of the results of which led to this study. The tests given were of two types, psychophysical and mental. Among the psychophysical tests was the rate of tapping test, and among the mental tests was the free association test. Both measure reaction time in a rough way. Beth excelled in both of these tests. She also excelled in a tracing test for steadiness of movement. A weight discrimination test used differs from the Stanford test in that different weights are each compared with one weight, while in the Stanford test five weights are arranged in order. In this test Beth excelled, discriminating a difference of two grams, while Ben's limen was five grams. In pitch discrimination neither was good, but Ben excelled, his limen being a difference of twelve vibrations and Beth's being a difference of seventeen vibrations.

In all of the mental tests—memorizing, vocabulary, analogies, opposites, and sentence-completion—Ben excelled markedly. In the test for memory span, they had the same score for digits, and Ben recalled one word more than Beth with unrelated words. With the Knox Cube Imitation Test, Ben did much better.

We find that in activities involving muscular co-ordination or quick reaction Beth is in advance of her brother. In activities

involving memorizing, seeing relationships, or exhibiting language ability, Ben is in advance of his sister.

Another study made at the same time was of the radiograph of the wrist. Each child approximated the norm for his age and sex. It is known in general that in children of the same age the ratio of total ossification to the carpal quadrilateral is greater in girls than in boys. In nine-year-old children, the percentage of ossification for boys is 59; for girls, 70. Ben's percentage was 58, and Beth's was 72; that is, Ben was slightly below the norm and Beth was somewhat above.

A further comparison of the two children was made by studying their work in the classroom. The reports of their teachers for a period of two years were carefully canvassed. During the period covered by these records Ben was commonly reported as a "problem case" in reading, writing, music, and arithmetic. In physical training he was given individual attention over a long period of time in an effort to improve his muscular co-ordination. This training appears to have been partially successful as he now shows better co-ordination than formerly. Beth was twice reported as needing help, once in reading and once in arithmetic, but in both cases the help was required to make up for absence.

The results of standardized reading tests are shown in Table I.

The teacher reports that Ben reads thoughtfully and reacts in a personal way to what he reads. If he disagrees, he feels the need of expressing his disagreement. If he agrees, he is ready to give corroborative evidence or to enlarge on what he has read. Beth can give a good report of her reading but shows no personal reaction. She accepts with little or no question whatever is presented.

Early in the school year 1921–22, in the second grade, Ben excelled his sister in oral reading and stood higher than any class average shown for the year. He seems to have deteriorated in this type of reading through the year, and at the first test of the third grade (1922–23) he was lower than formerly and much below his sister. After the second test he was given special help in oral reading, and at the time of the third test he had regained his ascendancy over his sister and was above the class average. In silent reading (1922–23), he did decidedly better than Beth in the first

test. He maintained his standing in the second test and made a material advance in the third test, but Beth made a sufficiently greater advance in both the second and third tests to excel. Both were well above the norm for their grade, and Beth was above the class average, while Ben was slightly below. The condition found suggests two questions. Was Ben's loss in oral reading due to the development of good silent-reading habits? Was his failure to maintain his ascendancy in silent reading due to the special stress on oral-reading habits which led to the improvement in oral reading?

TABLE I

	Ben	Beth	Class Average
Gray Oral Reading Test (1921–22):			
October	62.5	58.0	.....
March	55.0	.....	51.2
May	51.3	.....	52.9
June	50.0	.....	53.7
Gray Oral Reading Test (1922–23):			
First test	40.0	52.0	48.4
Second test	40.0	56.0	.....
Third test	56.3	53.8	53.8
Monroe Silent Reading Test* (1922–23):			
First Test:			
Comprehension	6.0	3.0	.....
Rate	81.0	56.0	.....
Second Test:			
Comprehension	6.0	9.0	.....
Rate	81.0	125.0	.....
Third Test:			
Comprehension	9.0	11.0	10.0
Rate	125.0	175.0	136.0

* The norms are as follows: comprehension, 3.8; rate, 78.

One other source of information is the estimate of the two children made by their third-grade teacher. This was given in an interview and was largely in answer to questions suggested from a study of the data previously gathered. This estimate may be summarized as follows:

Ben cannot work as other children do. He moves more slowly and less accurately in bodily activities. He is independent in thinking, is original in ideas expressed, and does not hesitate to differ in opinion from classmates or teacher or to stand by his opinion. He is persistent in following out a subject in which he

is interested, and it is very difficult to get his attention on anything else until he is satisfied on the point he is considering. This frequently makes him a trial in the class because he is not ready to turn to a new subject and interrupts the new work by returning to the matter which he has not yet disposed of. He does not learn easily the more mechanical or abstract work, but where independent thought is needed he excels. He is a child who would always stand out in a group. In view of his slow physical reaction time, it is rather remarkable that he makes judgments quickly and expresses them vigorously and clearly and is usually able to back up his conclusions with good reasons.

Beth is quiet and unobtrusive in manner, is tractable, and easily adjusts herself to the immediate interest of the group. When a task is set, she works at it well until it is completed. She is usually a comfort to her teacher because she can be relied on to give the desired response, to coincide with the opinions expressed, and to do what she is expected to do. She follows but shows little originality or independence in thinking. She does well with work that can be learned and can be given back as it came to her. In matters where judgment or an appreciation of relationships is necessary, she is not to be depended on. She harmonizes with the group in which she is placed, becoming part of the group rather than having an individuality such as makes her brother noticeable in any group.

The findings in this investigation suggest certain conclusions and questions. The facts regarding physical development which appear in this comparison agree with the findings of previous studies of this kind and confirm the conclusion that, in general, girls are in advance of boys of the same age. These two children differ in about the degree that would be expected. In their mental development, on the other hand, we find that, in terms of standardized tests, Ben and Beth show practically the same status. In this case there is not the same difference in mental development as in physical development. The question may then be raised, Is Ben's mental ability sufficiently greater than Beth's to make up for the difference in sex? If not, it must be concluded that there is not the correlation between the physical and mental development of the sexes that some have assumed.

HOW ABSENCE AFFECTS QUALITY OF WORK

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All teachers are concerned with problems of attendance. All know that some pupils fail because of absence. Generally, teachers think that absence vitally affects the work of the pupils, but few studies have been made to show the facts.

Personal opinion on a subject is always of questionable value. In order to give the teachers some definite facts to talk about, the principal of the Collinwood Junior High School made an extended study of the grades and attendance of 1,530 pupils enrolled in Grades VII A, VIII, and IX.

The data here given are for the first semester of the school year 1922–23. The teachers' marks are given in the form of letters. E represents excellent; G, good; F, fair; P, poor, just passing; and D, failure. The pupils are grouped according to ability in all grades, and marks are given on the basis of the results produced in proportion to the ability possessed. There is no understanding that the pupils' marks are to be reduced for absence. There are no general requirements concerning the making up of work missed during absence. The work in all subjects is departmentalized. The marks given in subjects such as music, physical training, hygiene, and art, which come only one or two periods a week, are not included in this study.

For purposes of this study, the pupils were separated into Group A, composed of pupils absent three days or less; Group B, composed of pupils absent four to eleven days; Group C, composed of pupils absent twelve to twenty-one days; and Group D, composed of pupils absent more than twenty-one days. This arbitrary grouping arose because the Cleveland term reports for schools call for a record of absence by similar grouping. Table I shows how the

1,530 pupils were distributed according to the number of days absent.

TABLE I

Grade	Group A	Group B	Group C	Group D	All Groups
VII A	214	123	34	14	385
VIII B	132	130	33	15	310
VIII A	150	121	52	10	333
IX B	121	89	22	16	248
IX A	103	109	32	10	254
Total	720	572	173	65	1,530

Table II shows the marks received by the pupils in the various groups. Thus, the pupils who were in Group A earned 516 E's; 1,344 G's; etc.

TABLE II

Mark	Group A	Group B	Group C	Group D	All Groups
E	516	244	43	4	807
G	1,344	895	182	36	2,457
F	982	872	258	62	2,174
P	368	535	251	110	1,264
D	36	77	56	64	233
Total	3,246	2,623	790	276	6,935

Table III gives the percentage of pupils in each group who earned each mark. This table shows clearly the better quality of marks earned by Groups A and B.

TABLE III

Mark	Group A	Group B	Group C	Group D	All Groups
E	16.0	9.3	5.4	1.4	11.6
G	41.4	34.1	23.0	13.0	35.4
F	30.2	33.2	32.7	22.5	31.3
P	11.3	20.4	31.8	39.9	18.2
D	1.1	2.9	7.1	23.2	3.4
Total	100.0	99.9	100.0	100.0	99.9

In order to find the average mark, E was assigned a numerical value of 4; G, 3; F, 2; P, 1; and D, 0. This made it possible for a pupil with four subjects to earn a score of 16 by making E in each subject; a pupil taking five subjects could score 20.

Table IV shows the average marks. The pupils in Group A earned an average mark of 2.6; Group B, 2.3; Group C, 1.9; and Group D, 1.3.

TABLE IV

	Group A	Group B	Group C	Group D
Number of marks	3,246	2,623	790	276
Number of pupils	720	572	173	65
Average score	11.9	10.4	8.6	5.5
Number of marks per pupil	4.5	4.6	4.6	4.2
Average mark	2.6	2.3	1.9	1.3

A further comparative study of the absence in the highest intelligence groups and in the lowest intelligence groups was also significant. The sections with the highest intelligence scores had 57 per cent in the group with the least absence and only 2 per cent in the group with the most absence, while the sections with the lowest intelligence scores show a decidedly greater amount of absence. Table V shows these results.

TABLE V

	Six Highest Intelligence Groups	Six Lowest Intelligence Groups	All Intelligence Groups
Group A:			
Number	122	66	720
Percentage	57	34	47
Group B:			
Number	72	81	572
Percentage	34	41	37
Group C:			
Number	14	36	173
Percentage	7	18	11
Group D:			
Number	5	13	65
Percentage	2	7	4
All groups	213	196	1,530

The study shows a definite correlation between absence and marks, although probably not as much as most teachers would expect. A further study of the same children over a longer period of time is, no doubt, needed to secure the most conclusive results.

THE EFFECT ON READING OF CHANGES IN THE SIZE OF TYPE

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This article reports a laboratory study which was undertaken in the effort to determine the changes in the reading process which are induced by varying the size of type or by introducing certain other changes in the sensory conditions presented to the reader. The reading throughout the experiment was silent reading.

The first sensory change to be considered is that produced by varying the size of type. The effect of this variation will be studied through an examination of the changes which it produces in the reading, first, of a group of adults and, second, of a group of children.

With the adults, two methods of study were used. First, a number of subjects read a series of paragraphs printed in different sizes of type. The rate of reading was measured by means of a stop-watch. Second, a detailed study of the number, length, and position of the fixations was made by means of photographs of the eye-movements in reading.

Two different sets of paragraphs were used in the study. The first set, consisting of fifty words to the paragraph, was somewhat more difficult than the second set. The second set, consisting of one hundred words to the paragraph, was prepared for use with children as well as with adults. The first set contained six paragraphs, one printed in each of the following sizes of type: 6, 9, 12, 18, 36, and 54 point, with $1\frac{1}{6}$, $2\frac{1}{2}$, $3\frac{1}{3}$, 5, 10, and 15-inch lines respectively. The second set contained paragraphs printed in 3, 4, 6, 12, 18, 36, 54, 72, and 90 point type with the length of the printed lines corresponding to the length of the printed lines of the first set. Each paragraph in both sets was accompanied by a paragraph of identical content printed in 12 point type with a $3\frac{1}{3}$ inch line. Throughout the experiments the different sizes of type were photographic reductions and enlargements of the accom-

panying paragraphs in 12 point type. The following is a sample paragraph printed in 6 point type; 12 point type is twice this size; 18 point type is three times this size.

> The story of the life of George Washington is read by more boys and girls than that of any other man in our history. He was well liked by the children with whom he played at school and at home. His mates used to choose him for their leader in their games. He could run faster, jump farther, and throw a ball a greater distance than anyone else. He grew to be a tall, fine looking man. He was fond of outdoor games and all kinds of good sport. As president he did what he thought best for the country.

During the first series of tests each subject read one of the paragraphs printed in one of the various sizes of type. He immediately re-read the same paragraph printed in 12 point type. The subject then read another paragraph printed in another size of type and then re-read that paragraph printed in 12 point type. This procedure was continued until the series was completed. The series was always begun with a paragraph printed in a medium size of type. The order of reading was varied so that the extreme sizes of type were not read last any more often than the other sizes of type. The reader was directed "to read silently as he would study a lesson." In making comparisons between the re-reading in 12 point type of passages first read in type of a different size, allowance must be made for the increase in the rate of reading resulting from familiarity. This matter will be traced more fully in the latter part of this paper. At this point it may be noted that some idea of the amount of improvement in reading which results from second reading can be gained by comparing the two readings of the passage reported in Tables I and II in the sixth vertical column. This paragraph was read twice in 12 point type. The various readings shown in Table II should be discounted to the degree suggested by this comparison.

Twenty-four adult subjects read the paragraphs of the longer series, and twenty-one read the paragraphs of the shorter series. In order to test the effect of the extreme sizes of type, thirty-three subjects read the paragraphs of the second series printed in 90, 12, and 3 point type. Tables I and II give the records for the first group of twenty-four subjects. Table I gives the rate of read-

ing for each subject reading the size of type indicated. Table II gives the rate of reading for the same subjects re-reading the same material printed in 12 point type; that is, Subject 1 read the paragraph printed in 90 point type in 13.0 seconds and re-read the same material printed in 12 point type in 10.0 seconds.

TABLE I

Subject	Size of Type								
	90	72	54	36	18	12	6	4	3
1	13.0	11.0	10.1	9.3	10.3	9.1	10.0	12.3	16.1
2	9.0	7.0	7.0	6.4	6.2	5.0	5.2	7.5	8.2
3	18.0	16.1	17.5	12.3	12.6	12.0	11.6	12.6	13.0
4	10.0	8.0	9.3	7.1	8.0	6.0	6.3	5.6	6.7
5	11.0	9.4	9.0	9.2	7.2	6.0	5.4	10.0	9.3
6	13.6	12.0	10.5	10.2	9.5	9.0	9.5	10.3	13.2
7	10.2	.....	9.2	7.6	7.0	.....	8.0	7.0	10.8
8	14.0	.....	9.2	7.4	7.2	9.0	9.4	10.4	10.3
9	12.6	.....	8.0	7.6	6.8	.....	5.6	8.0	10.6
10	15.0	.....	8.1	9.0	7.4	7.3	7.2	10.4	9.3
11	15.0	.....	14.0	13.0	12.0	12.5	11.5	18.0	14.0
12	12.0	10.0	8.5	7.0	7.1	6.5	9.1	30.0	56.0
13	.....	11.0	8.5	7.6	6.8	7.7	9.5	9.5	7.0
14	.....	9.3	8.3	7.5	7.6	7.5	7.8	7.5	9.5
15	.....	12.8	9.7	10.4	7.7	7.6	8.9	9.1	9.0
16	.....	5.8	6.8	5.4	4.4	4.6	4.0	5.0	6.0
17	.....	9.0	8.6	8.6	6.8	6.5	8.5	24.0	28.5
18	.....	11.0	10.5	9.5	8.5	9.2	7.0	18.6	12.7
19	.....	10.0	9.2	11.8	7.4	9.6	10.2	.....	.....
20	.....	9.2	8.4	7.2	6.2	6.0	6.0	7.6	.....
21	.....	7.0	7.4	5.8	4.8	7.2	6.2	8.2	.....
22	.....	9.2	9.2	10.0	6.4	8.2	6.8	6.8	.....
23	.....	13.6	9.0	7.4	6.6	6.6	6.4	30.4	.....
24	16.0	13.0	12.1	11.8	9.4	9.0	9.0	14.4	19.0
Average	13.5	10.2	9.5	9.0	7.6	8.0	7.9	12.4	14.6

Table III gives the summary of the results for seventy-eight subjects. A study of the individual records shows many variations from the average. Some subjects read all of the sizes of type at about the same rate. Some were slowed down by the large type and not so much by the small type. Others were greatly retarded by the small type and not by the large type. Some readers were affected by both large and small type. In general, good readers with normal eyesight are somewhat retarded by type as large as or larger than 36 point and by type as small as or smaller than

6 point. Subjects 12, 17, 19, and 23 were all found to have defective vision. This accounts for their retardation in reading small type. It is to be remembered that these paragraphs varied in length of line as well as in size of type.

TABLE II

Subject	12 Point Type								
1	10.0	10.0	7.3	7.3	8.1	8.3	8.0	9.3	9.3
2	5.0	4.2	4.7	4.4	5.0	5.0	5.1	5.2	5.2
3	12.5	13.5	11.4	11.3	11.6	10.8	10.5	9.5	11.3
4	5.0	6.1	6.0	6.0	6.6	5.2	6.0	5.8	7.4
5	5.3	7.1	8.2	8.0	5.0	6.2	5.0	8.3	6.2
6	9.1	9.0	8.8	10.0	9.1	9.0	9.0	9.0	8.9
7	6.8	.....	6.6	6.0	6.8	.....	6.4	5.8	6.6
8	8.3	.....	8.0	7.2	7.0	6.4	7.2	9.4	7.3
9	8.6	.....	5.6	5.0	6.2	.....	4.2	4.8	5.0
10	8.1	.....	6.0	8.0	8.4	7.0	7.0	8.1	8.4
11	12.5	.....	15.0	12.0	11.5	12.0	10.0	13.0	10.0
12	6.4	6.5	6.5	6.5	6.5	6.8	6.5	6.5	6.5
13	.....	7.4	7.2	7.0	7.0	7.0	6.5	7.0	7.0
14	.....	7.0	7.5	6.5	7.0	7.7	6.6	6.5	6.5
15	.....	8.2	7.0	7.0	7.0	10.2	7.6	7.3	6.3
16	.....	4.9	3.8	4.0	4.2	3.6	3.4	4.2	4.6
17	.....	5.9	6.3	6.6	6.2	6.0	6.6	6.5	5.3
18	.....	8.5	8.3	8.6	9.2	7.9	8.2	7.8	7.2
19	.....	10.0	8.0	7.0	6.8	6.0	6.0	7.4	.....
20	.....	5.4	5.4	5.4	6.4	.....	5.0	5.0	.....
21	.....	6.2	4.8	4.6	5.0	.....	5.0	5.6	.....
22	.....	6.6	6.6	5.6	5.8	.....	5.2	6.2	.....
23	.....	8.2	8.6	5.0	9.0	.....	6.6	7.2	.....
24	10.0	9.8	9.5	8.2	9.0	8.4	9.2	8.4	9.8
Average	8.3	7.6	7.4	7.0	7.3	7.4	6.7	7.2	7.3

In order to make a more detailed study of the effects of the size of type, the eye-movements of ten subjects were photographed by means of the apparatus devised by Dodge and improved by Schmidt,[1] C. T. Gray,[2] and others. This part of the experiment was especially concerned with the length, number, and position of the fixations as affected by the size of type and the attendant length of line. Six different sizes of type were used. Table IV gives the

[1] William Anton Schmidt, *An Experimental Study in the Psychology of Reading.* Supplementary Educational Monographs, Vol. I, No. 2. Chicago: University of Chicago Press, 1917. Pp. iv+126.

[2] Clarence Truman Gray, *Types of Reading Ability as Exhibited through Tests and Laboratory Experiments.* Supplementary Educational Monographs, Vol. I, No. 5. Chicago: University of Chicago Press, 1917. Pp. xiv+196.

average length of fixations per line. Here again the table of averages covers up certain individual differences. There was a considerable increase in time for reading 6 point type in the case of four subjects and an even larger increase in the case of another. There was less increase for the other five subjects. The large type had less effect than the small type. Three subjects were slowed down only slightly by the large type, while the others were more

TABLE III

Size of Type	Number of Cases	Percentage of Increase in Rate of Reading
90	49	52.7
72	18	35.0
54	44	33.0
36	44	20.0
18	44	9.0
12	52	12.2
9	31	13.9
6	44	21.1
4	23	74.0
3	51	67.0

TABLE IV

Size of Type	Average Length of Fixations in Seconds per Line	Average Length of Fixations in Seconds per Line in Reading Same Material in 12 Point Type
36	1.28	1.16
24	1.20	1.06
18	1.13	1.06
12	1.19	1.16
9	1.29	1.12
6	1.39	1.16

affected. The general change in the rate of reading shown by these figures is approximately the same as that found in the first series of measurements.

As already stated, a careful examination of the subjects especially affected by small type showed that practically all had serious visual defects. Those most affected by large type had narrow ranges of eye-movements or very slow movements, as shown by tests of these factors.

A slight decrease in the number of fixations was found when very small type was read, and a few more fixations than usual when large type was read. Again there were individual differences. Two subjects made many more fixations with the large type, while two others made about the same number of fixations with all sizes of type. The averages are shown in Table V.

TABLE V

Size of Type	Average Number of Fixations per Line	Average Number of Fixations per Line in Reading Same Material in 12 Point Type
36	5.86	4.66
24	5.67	4.68
18	5.39	4.31
12	5.22	4.68
9	5.13	4.81
6	4.65	4.81

The position of the individual fixations for each reader was sometimes almost identical in two readings of the same material in spite of the differences in type. Sometimes the change in type led to marked differences in points of fixation. In other instances we found cases of general agreement with added fixations, especially in the large type. The complex motor processes in reading are, in general, rhythmic and carry the reader along at a rather regular rate of about so many fixations per line. Any unusual or difficult passage or significant change may easily break up this process. This makes for only very general agreement in two readings of the same material, although the change in movements here noted is probably not as great as are the changes in successive performances of other kinds of motor acts under changed external conditions.

Figure I gives an example of the type of facts which appeared. This figure shows the number, position, and length of the fixations for three readings of the same material by one subject. The order of the fixations is shown by the numbers above the vertical lines drawn across the reading material. These vertical lines indicate the points fixated. The numbers below the lines give the length of the fixations in hundredths of a second. The first reading is represented by the longest lines, the second reading by the medium

length lines, and the third reading by the shortest lines. There were five fixations in the first line in the first and second readings and six fixations in the third reading. The lines in this figure have been separated in order to show the fixations. The lines were not so separated in the material that the subject read.

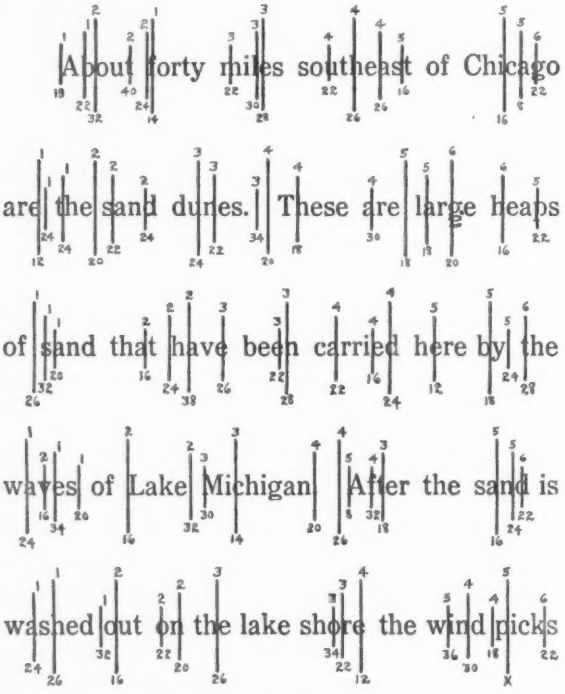
About forty miles southeast of Chicago
are the sand dunes. These are large heaps
of sand that have been carried here by the
waves of Lake Michigan. After the sand is
washed out on the lake shore the wind picks

FIG. 1.—Fixations for three readings of the same material

In order to determine the effects of repeated reading, the following experiment was carried out. Six college students each read several times in succession the series of paragraphs used in the first part of this study. The rate of reading was measured by the use of a stop-watch. The reading of the different sized type was followed in regular alternation by the re-reading of the same material

printed in 12 point type. The record for one subject shown in Table VI is typical.

One of the striking results is the lack of regularity in the effects produced by re-reading. The variations in rate are not great; sometimes they show an increase and sometimes a decrease in rate in successive readings of the 12 point type. If we compare the first readings of different passages in different types, we find again that the changes are not always in the same direction.

TABLE VI

Size of Type	First Reading	First Reading of 12 Point Type	Second Reading	Second Reading of 12 Point Type	Third Reading	Third Reading of 12 Point Type
72.....	11.0	8.5	10.5	8.1	10.5	8.5
54.....	10.5	8.2	11.5	8.2	9.5	8.2
36.....	9.5	8.6	9.6	8.6	9.5	8.2
18.....	8.5	9.2	9.4	6.7	8.8	6.8
12.....	9.2	7.9	8.1	8.0	8.5	8.5
9.....	8.5	8.0	7.6	7.8	7.8	7.4
6.....	9.5	7.0	8.2	7.5	8.5	7.6
4.....	18.6	7.8	14.0	7.6	11.2	7.4
3.....	12.7	7.2	9.5	5.6	8.3	6.5

Finally, if we compare the first reading of the passage in 72 point type with the succeeding readings in the same type, we find that the results are not regular. In the case of the six subjects we find one notable exception. The only generalization we can make is that there are more increases in rate than decreases; and the averages for several readings show an increase in rate as the reading material becomes more familiar.

In order to determine whether changes in size of type affect the reading of children as they do the reading of adults, a group of children was asked to read the easier set of paragraphs. The group was composed of nineteen children in the third grade, twenty-four in the fourth grade, and six in the fifth grade. Table VII gives the percentage of retardation in reading rate for each group with the different sizes of type as compared with the second reading of the same material in 12 point type.

The reading rates for children are much more irregular than the reading rates for adults. In many cases no regular reading habits

have been formed. Furthermore, the material was more difficult for the children; hence the reading was slower. These facts help to account for the smaller effect of changes in the size of type on the reading of children.

TABLE VII

Size of Type	Third Grade	Fourth Grade	Fifth Grade
72	18.7	35.8	36.0
54	17.0	40.4	28.3
36	22.2	11.7	18.8
18	7.6	3.2	18.0
12	3.8	7.2	.....
9	6.6	12.1	9.2
6	6.3	16.4	28.2
4	11.2	26.2	47.1

CONCLUSIONS

1. The reading of the average adult is not greatly affected by changes in the size of type between the limits of 36 point and 6 point type. Above 36 point type or below 6 point type the rate of reading begins to decrease for a majority of the subjects. Others are not affected by even greater differences. There are many individual variations in the effect of the size of type on reading.

2. Visual defects and low visual acuity result in a decrease in the rate of reading small type.

3. Slow ocular movements and a narrow span of the visual field result in a decrease in the rate of reading large type.

4. The number, length, and position of fixations for a given subject re-reading the same material several times show only general similarity. Sometimes the fixations are very similarly located in the different readings. Cases are at hand showing that lines are broken up very differently in the various readings.

5. Children are not so greatly affected as adults by changes in the size of type. They show greater fluctuations in their readings. As a rule, no definite reading habits have been formed. Size of type, therefore, is not relatively as important a factor in the reading of children as has sometimes been supposed.

Educational Writings

REVIEWS AND BOOK NOTES

The development of education for women.—Education in a rapidly evolving society is continually confronted with new problems, demanding new adjustments and new points of view, from which their solution may be planned. One of the conspicuous movements in modern society is feminism. Women have demanded and gained entrance, not only to diversified business activities, but also to the arts and professions. This is not all. They have demonstrated in them their ability to hold their own, so that the problems incident to the movement are likely to be abiding. Furthermore, their enfranchisement injects still another factor, the implications of which for the educator are likewise to be considered. With business, the professions, vocations, politics, and the home all demanding specific training, the question arises: What shall be the educational program mapped out for women? At no time in the past have these problems been so important as at present, when the equality of the sexes is so rapidly realizing itself in the more advanced civilizations.

The appearance of a volume[1] dealing with these problems is noteworthy, especially so when a specific and well-planned discussion is presented.

The initial chapter traces the social status of women from primitive times to the near present. Their social, educational, and political emancipation is developed in bold outline. Thus is furnished the background for subsequent chapters.

"College Women and the Marriage Rate" is the title of the second chapter. It deals with the frequently noted phenomenon of the low birth-rate among college alumnae and raises the question whether such may be rightly attributable to institutional influences, and, even if so, whether or not society is thereby as great a loser as is sometimes assumed, since other values may be realized by the transmission through ideals of higher social and other relations.

Following this, the author opens the question as to the justification of a highly divergent type of education for the two sexes, inquiring as to whether or not sufficient mental and physiological differences exist to justify it. The evidences presented and the arguments used lead to the general conclusion that such divergence is not justified.

[1] Willystine Goodsell, *The Education of Women.* New York: Macmillan Co., 1923. Pp. vi+378.

The inquiry is continued in chapter iv, which deals with the arguments for and against the differentiated program of vocational education. The question of coeducation likewise requires treatment, with the arguments closing in favor of it.

The two chapters entitled "Cultural *vs.* Vocational Education" and "Vocational Education of Working Girls" are exceptionally well conceived and written. The former traces the evolution of the traditional culture theory with the social waste inherent in it and leads up to the argument for liberalized vocational training deeply tinged with socializing purposes. The latter deals directly with the problems connected with vocational education in which two large questions emerge: How may vocational education meet the demands of industry for technical training and also make possible desirable cultural outcomes? How at the same time may women be prepared for their function as home-makers? The position which the author takes is thoroughly in accord with the modern conception of what education should be and do.

Under the title, "The Social Education of Women," the author presents the results of an inquiry as to what is now being done in higher institutions for the purpose of developing women for effective participation in social and civic activities. Here are brought together the results obtained by sending a questionnaire to a large number of colleges and universities. It is apparent, from the evidence given, that some of these institutions already recognize their obligations in this field.

The author sets forth in vigorous language the neglect of the physical education of women which has so long prevailed and presents facts indicative of significant tendencies with reference thereto. The discussion is replete with sound principles and is accompanied (in the appendix) by the results of a questionnaire concerning the amount and character of physical education afforded girls and women in typical high schools and colleges.

The last chapter, entitled "Values in Education," may be regarded as a summary of the author's position. It is essentially a philosophical treatment of the problems earlier developed but here woven into a coherent overview.

This volume will be of distinct service, not only to those who are concerned with the education of women, but to those who are interested in modern educational movements.

R. E. WAGER

EMORY UNIVERSITY

New book on statistics.—Workers in the field of education who are called upon to deal with data from a statistical point of view have eagerly awaited the publication of the text[1] dealing with this subject by Professor Kelley of Stanford University.

[1] Truman L. Kelley, *Statistical Method.* New York: Macmillan Co., 1923. Pp. xii+390.

At the first reading of the Preface, one is impressed with the wide range of the book as indicated by the author's statement of purpose that it shall serve the needs of "biologists, economists, educators, and psychologists." Although these fields are all closely related, and much, if not all, of the method involved in a comprehensive treatment of statistics may be common to all of them, the educational specialist is somewhat disappointed at the generalized aim of the text. A further acquaintance with the volume naturally shows little data bearing on school problems and few suggestions of educational application either by way of illustration or by way of exercises.

The author begins with a brief treatment of "Graphic Methods," in which typical graphs are shown and interpreted and principles of graphic construction presented. While the reader will find the book comparatively simple at this point, it is hardly adequate for the beginner who needs careful guidance in the construction of graphs.

The organization of topics is somewhat according to the usual plan, dealing in turn with "The Measurement of Central Tendencies" (mean, median, percentiles, harmonic mean, geometric mean); "Measures of Dispersion" (mean deviation, quartile deviation, standard deviation, standard error); "Normal Probability Distribution"; and "Measuring Relationship." In addition, chapters on "The Fitting of Curves to Distributions," "Multiple Correlation," "Sundry Special Problems," and "Index Numbers" are included.

The average worker in education will find the text comprehensible and offering few difficulties through the treatment of "The Measurement of Central Tendencies," but from this point on mathematical complexities pile up in increasing number, so that the chapters on "Measuring Relationship," "Multiple Correlation," and "The Fitting of Curves to Distributions" are mastered only by arduous labor on the part of those who have not been trained in the author's particular techniques and symbolism.

The complex mathematical treatment noted in the book is one of its leading characteristics. The author is apparently greatly interested in the derivation of formulas and their thorough exposition. Noting his assertion in the Preface that the book was written to serve two needs, that of workers "who know little of higher mathematics, possibly care less, and who use statistical methods merely as a device to portray the facts of their group investigations; and that of those . . . . who resort to mathematics to aid in the discovery of new truths," the reader is convinced that the first and major need has been comparatively neglected. As a result, the book can have no great appeal to the field worker in education, although it may, and probably will, prove to be a stimulus to advanced workers in statistics for a long period to come.

What has been needed in education is a very simple practical treatment and exposition in clear language of the basic facts and methods of statistics. Here the reader finds chiefly abstract mathematical theory. One without thorough mathematical training will have difficulty in grasping such terms as

"homoscedastic" and "dichotomic point." Instead of formulas being reduced to the simplest terms, they are greatly amplified. Unfortunately, among the many symbols made use of, there are several instances where the meaning of a symbol varies according to its use. Just at present a lucid practical demonstration is needed of the application of the normal-curve, especially in relation to the scaling of scores, of reliability, and of multiple-correlation methods. This need also remains unmet by this text.

The book is well printed, and the diagrams are well made. A glossary would have been helpful, but a good list of symbols with their definitions, a good bibliography, and a set of Kelley-Wood tables add to the usefulness of the volume.

The reader leaves even a hurried survey of the text with a great measure of admiration and respect for its detailed and scholarly treatment.

PAUL V. WEST

UNIVERSITY OF CHATTANOOGA

A general book on the use of motion pictures in the school.—One has become accustomed to expect a discussion of visual education to be baldly propagandic in nature. *Motion Pictures in Education*[1] is, therefore, pleasantly disappointing in its general tone, since it avoids the extreme statements which are commonly found in writings on the subject of motion pictures. It is true that the authors are rather enthusiastic in their advocacy of the wider use of motion pictures in the schools, but they recognize that their use is subject to certain limitations. For example, they say,

> It needs no great stretch of the imagination to see the cinema—not as a usurper, not in the place of any of the elements of the school which time and experience have proven essential, but as a valuable helper, making lessons easier here, simpler there, quicker, more pleasant and perhaps more economical for pupil and school [p. 256].

The book begins with a brief historical survey of the development of educational motion pictures. In this account there is a statement of the problems which are encountered in the administration and distribution of motion pictures in the schools. Following this, there is presented a list of objections to motion pictures, some of which are important, and some of which are rather trivial in nature or beside the point. The objections are then answered in some detail. In general, the answers to the objections are adequate, although, in a few cases, they fail to give due weight to the difficulties which are raised by the objections. In the next division of the book, the authors attempt to show in some detail where films should be used. There is then presented a rather elaborate list of films which are available for instruction. This is followed by a discussion of methods and technique in installing and operating motion-picture equipment.

[1] Don Carlos Ellis and Laura Thornborough, *Motion Pictures in Education*. New York: Thomas Y. Crowell Co., 1923. Pp. xviii+284. $2.50.

The book contains a large amount of information which will be helpful to the teacher or supervisor who wishes to make use of motion pictures. The information might be of greater service if it had been organized somewhat more carefully. For example, in the discussion of films available for instruction, there are presented lists of films which are classified according to the agency which distributes them or which uses them. These lists might have been more valuable if the films had been classified on the basis of the nature of the films and the place in the school where they might advantageously be used. The information might have been of greater service, also, if the films had been somewhat more carefully reviewed. It is evident that many of the films which are prepared by even the best companies are not highly successful. It is desirable that some discrimination be made, in a book of this character, between successful and unsuccessful pictures, since the teacher or the supervisor cannot, as in the case of textbooks, examine the films before they are ordered for use.

FRANK N. FREEMAN

Psychology for teachers.—It is universally recognized that a course in general psychology is an essential element in a teacher's training. But the definition of such a course has been by no means clear, and the character of its subject-matter has often been determined by interests other than those of the student of education. Within recent years, several attempts have been made to write a general psychology for teachers. One of the most successful of these is a new volume[1] by Professor Gates.

Dr. Gates has presented those principles of psychology which are of distinct significance in education, with a resulting body of material which differs, in a number of respects, from the traditional introductory textbook in this subject. One of the most obvious of these deviations is the large reduction in the space devoted to the sensory and perceptual processes. The reviewer is glad to note the absence of abstract discussions of memory, imagination, judgment, and attention. Such material from these topics as is relevant to the educative process is introduced in the discussions of types of learning and mental responses. The complex mental processes receive the greater emphasis throughout. A number of specialized chapters appear, dealing with such topics as individual differences, intelligence, and the measurement and correlation of traits.

The author's treatment of instincts, emotions, and of "The Dynamic Rôle of Instincts in Habit Formation" is very commendable. The length of the list of instincts may be open to criticism, although the answer might be made that such criticism is a matter of definition. The reaction to the Freudian psychology is wholesome. It is important that teachers get the scientific facts in regard to the subconscious. However, in view of the widespread

[1] Arthur I. Gates, *Psychology for Students of Education.* New York: Macmillan Co., 1923. Pp. xvi+490.

popularity of these doctrines, one doubts whether the enthusiastic adherents to such views will be convinced by the statement that "when not in a state of activity, impulses do not actually exist as entities in the unconscious, in the subconscious, or in the mechanisms which give rise to them any more than snaps and pops exist, as such, in an inactive whip" (p. 202). A fuller discussion here would be helpful.

The chapter on formal discipline gives a very clear statement of the effects and methods of the transfer of training. The author's view is significantly summarized as follows:

> How much transfer is obtained, then, depends in a measure on how we are instructed, on how we are led to react, and on how well we understand or generalize our experience. It depends, in part, also on the character of the subject-matter with which we work [p. 371].

The chapter on "Intelligence" deserves mention as a clear and straightforward presentation of a much confused subject. Dr. Gates takes a definite position and supports it well.

On the whole, the book is an excellent piece of work. It is substantial enough to meet fully the requirements for a college text and is free from the charge of superficiality which has been directed at some of the briefer books on this subject. A course based on it should provide students of education with a sound understanding of those principles of psychology which are significant for teachers.

G. T. BUSWELL

A book for the principal.—Unquestionably, Cubberley has given us some of our best books in the field of school administration. Very likely, too, he has given us more books than any other individual working in the field of education. Now comes another volume[1] from his productive pen. This book, to quote from its Preface, is a treatise on "the organization, administration, and supervision of instruction in an elementary school in a city, town, or county-unit school system." In it, the author has made a detailed "job analysis" of the work of the elementary-school principal and has made suggestions as to how his work should be done.

The author begins with a chapter on "Type Forms of Administrative Organization," following this with several chapters on the general character of the principal's work. A series of specialized chapters follow, covering such details as "The First Day of School," "Intermissions, Lines, and Drills," etc. Other outstanding chapters deal with "Business Organization and Administration," "Health and Sanitary Control," "Classifying and Promoting the Pupils," "Planning the Supervision," "Making Teachers' Meetings Profitable," and "The Principal as a Leader in the Profession." The field covered is obviously comprehensive.

[1] Ellwood P. Cubberley, *The Principal and his School.* Boston: Houghton Mifflin Co., 1923. Pp. xviii+572. $2.40.

Being a "job analysis" of the work of the elementary-school principal, the book should be a very practical one. It mentions literally thousands of problems that the principal will meet in the organization, administration, and supervision of his school; but it does more than this—it gives concrete and practical suggestions as to how these multitudinous problems may be handled.

The book meets admirably a professional need, for, unquestionably, the principal and his work have been, until very recently, entirely neglected in our thinking. Yet "the principal is the school." The book will undoubtedly be a potent force in bringing the principal into his own. It is the most timely book on education which has appeared in recent months.

Although it is designed primarily for the principal of the elementary school, the book has valuable material for principals of all types of schools. For the group of principals, the book is indispensable; and to all others who desire a broader view of the field of education, it should make a strong appeal.

The book is slightly tedious in places, and the English is frequently a little loose. Nevertheless, it is an outstanding recent contribution to educational literature.

WARD G. REEDER

OHIO STATE UNIVERSITY

History of the United States Bureau of Education.—For some time the idea of a national department of education with a secretary in the cabinet has been given considerable attention by leading school men and educators the country over. Therefore, it seems particularly appropriate that rather comprehensive information be available regarding the present Bureau of Education. A publication[1] has recently been prepared under the direction of the Institute for Government Research, giving a detailed statement of the history, activities, and organization of the Bureau of Education from its first establishment to the present time. This is supplemented by a very full and comprehensive appendix.

The study is wholly historical and descriptive in character. The author says:

> No attempt is made . . . . to subject the conditions described to criticism, nor to indicate features in respect to which changes might with advantage be made. Upon administrators themselves falls responsibility for making or proposing changes which will result in the improvement of methods of administration. The primary aim of outside agencies should be to emphasize this responsibility and facilitate its fulfilment [p. ix].

The first ninety-three pages are divided between two chapters on the history and activities of the Bureau. Of interest in chapter i is an account of the work

[1] Darrell Hevenor Smith, *The Bureau of Education: Its History, Activities, and Organization.* Service Monographs of the United States Government, No. 14. Baltimore, Maryland: Johns Hopkins Press, 1923. Pp. xiv+158. $1.00.

of the various commissioners of education, beginning with Barnard. Among the activities discussed in chapter ii, and with which the ordinary reader is probably not familiar, is the duty of the Bureau with respect to land-grant colleges, Alaskan native children, the Alaskan reindeer industry, etc.

Chapter iii deals in a few pages with the organization of the Bureau, while the remaining fifty-seven pages are taken up with an appendix in which the following may be found: outline of organization, activities, publications, laws, financial statements, and bibliography.

For the average lay reader, a historical and descriptive study of this character would probably have little interest, but for the professional school man here is available a complete fund of information, in a well organized form, regarding the Bureau of Education.

From a reading of the monograph one is impressed with the small amount of power and authority in the hands of the Bureau.

> Over fifty years of legislation added but little to the original power or jurisdiction of the Bureau. The laws which have affected it most are those increasing the administrative duties which, strictly speaking, are incidental and extraneous [p. 9].

CARTER V. GOOD

A comprehensive view of the place of story-telling.—The importance of telling stories to little children in the school has been demonstrated so clearly that the "story hour" has become a period in the program of all primary school rooms. A unique view[1] of the art of story-telling is now presented, in which the author departs from the beaten path of the telling of stories in the school and gives a much wider scope to this art.

In the first three chapters, the theory and practice of the art of story-telling are treated very much as in other books on this subject; that is, the breadth of the story-teller's opportunity and the preparation and telling of the story are discussed. In each of these chapters is a very interesting diagram calling attention to the important points in the preparation and telling of stories. These diagrams are uniquely drawn and focus the attention of the reader on the main points which lead to success.

In chapter iv one gets the first hint of the growth of good citizenship through story-telling. This chapter and the five succeeding chapters present the interesting viewpoint of telling stories to many different groups—the evening schools, mothers' classes, library groups, neighborhood and community gatherings, and the factory or shop noon-hour groups. Stories told to little children are to be retold to groups of parents with a twofold aim: first, that the foreign-born may become accustomed to the English language; second, that they may become aware of the work being done in the schools and thus acquire an interest in it. In relation to community story-telling an interesting account

[1] Mildred P. Forbes, *Good Citizenship through Story-telling*. New York: Macmillan Co., 1923. Pp. xii+256.

is given of an experiment in Bridgeport, Connecticut, in street story-telling. The name of the group of volunteers, "The Gypsy Story-Tellers of Bridgeport," was a direct outgrowth of the gypsy costume adopted by the group. The plan of sending members of the group out into the city to tell stories, wherever there was a demand for the work, was continued with such great success that a similar plan was adopted in Boston and surrounding cities.

One chapter is devoted to the story as an aid in teaching the various subjects in the school—geography, history, nature-study, etc. One questions the teaching of spelling and nature-study by means of the story. A further question is raised as to the value of many of the realistic stories used as illustrative material. Many of these could be characterized as "story-stuff" rather than literature. Better material could easily be found in the wealth of folk-lore and fairy-tales.

The remaining chapters of the book are devoted to a discussion of the dramatization of stories and the attributes of a good story-teller. Exercises for the analysis of each chapter and an appendix containing graded source material complete a book which will be an addition to the library of any teacher interested in the art of story-telling.

KATHARINE MARTIN

Psychological principles in teaching.—Another text[1] in Lippincott's Educational Guide Series is, as its title may indicate, a treatment of educational psychology and is, in some ways, a new departure in this field.

The author voices his practical ideal in regard to education and psychology courses in the following emphatic terms:

> Much criticism has been given in recent years to courses . . . . intended for teachers, and in many cases the adverse criticism is that much of the data secured from these courses bore no obvious, direct and useful relationship to the teacher's work. . . . . The material presented in this volume and the methods suggested for its use have as their chief aim the identification of theory with practice, or the application of information to actual problems of the school [p. vii].

The practical emphasis of the text is especially manifest in the suggestive experiments and exercises at the end of each chapter in which educational applications are constantly indicated. The experiments may be set up and performed by the students without complex laboratory equipment, and the exercises are, for the most part, those which call for extensive and intensive reading and original acts of judgment based on such reading.

The book presupposes a basic knowledge of psychological terms and principles. It is designed for either elementary or advanced courses in educational psychology, the adjustment being made by simply cutting down or extending the number of experiments or exercises performed or the number of references

[1] Arthur Raymond Mead, *Learning and Teaching*. Philadelphia: J. B. Lippincott Co., 1923. Pp. xii+278. $2.50.

examined. One is greatly impressed by the large number of bibliographical references; in fact, if a student were to perform all of the experiments and exercises thoroughly and read all of the references listed, his work should receive credit for much more than the three or six semester hours suggested by the author.

Less than one-half of the text is straight reading matter, and the organization of this, as well as of the exercises, experiments, and references, produces the impression that the book is hardly more than a syllabus, although a valuable one. The book would have been greatly strengthened had the author referred specifically to many of the references and summarized the findings of many investigators to a greater extent.

The instructor who uses the text will be glad to find that it does not attempt to dominate him by stating what shall compose each lesson or by putting the words in his mouth. He will be able to make assignments adapted to the needs of his class and to supplement the topics as desired, but, for the most effective work, he should be acquainted with the content of the references given, or at least the more meritorious and essential of them.

The "Aims of Education" are treated only after the discussion of "Learning and Its Factors," "Individual Differences," "Transfer of Training," and "Measurement of Mental Functions" is disposed of. The reader is thus brought to a point where he can better comprehend the involved problems. This topic is followed by a brief introduction to the subject of "Original Nature and Education," a very incomplete, yet suggestive, treatment of "Psychological Conditions Concerned with Curricula," and an unorganized presentation of "Psychological Principles Involved in Educational Method."

Some doubt may be fairly cast on the advisability of introducing such an inadequate study of statistical method into a book of this kind. Its chief value may lie in the whetting of the desire of the student to continue the study in some more thorough manner; otherwise, the space is largely wasted.

The greatest significance of the text lies in the fact that it is an honest attempt, by simplicity of presentation and the use of the inductive method, to place the teaching of educational psychology on a sound psychological basis, and, as such, it will find a place, not only in the classroom, but also in the reading circle and in the private library.

PAUL V. WEST

UNIVERSITY OF CHATTANOOGA

Two new books in the field of American history for Grades VII and VIII.—Two authors who have achieved remarkable success in the history of American and English literature for high-school students have recently embarked upon a new adventure. For many years high-school students have been reading and studying with interest and profit texts in the field of literature by Reuben Post Halleck and William J. Long. Henceforth, children in the upper elementary grades will have the opportunity to study texts by these well-known writers,

for each is now the author of a text in American history on the seventh- and eighth-grade level.[1]

The publishing of these two texts by the two largest textbook companies in this country is a concrete example of the faith publishers have in the literary quality of texts in history. To assure this much-to-be-desired quality, these companies at the outset accepted manuscripts from men who were noted for their ability to write well rather than for their superior knowledge of the field in which they wrote. While this is but one of three possible ways to secure what these companies desired, it is in all probability the most direct way. To find a specialist in the field of American history able to write the quality of English found in the two books under review would be no easy task. Furthermore, to find an expert in the field of literature to rewrite a text produced by a specialist would also be a difficult matter. But to find a specialist in history to read the manuscript of a textbook writer with superior literary ability is attended with no difficulties, for the ratio between the two is probably a thousand to one.

While these texts are almost identical in size, general appearance, and literary qualities, they differ in a few fundamentals. In the first place, Halleck uses no large general divisions, while Long divides his story into seven main parts. Halleck uses chapter divisions only for his main story, there being thirty-six chapters in all. In each of his major divisions, Long includes from three to eight chapters, having a total of thirty-eight chapters.

In such matters as illustrations, maps, teaching aids, and appendixes, one does not find anything especially new in either of these texts. These elements are well cared for, but no better than in a number of texts already on the market in the same field.

As to the attention given to the various possible chronological divisions of our history, these two books do not differ greatly from each other or from other recently published books in this field. For example, Halleck devotes approximately 9 per cent of his entire space to the period prior to 1607, while Long gives to this period a little over 10 per cent of his space. To the period from 1607 to 1763 Halleck devotes 113 pages or 21 per cent; to this same period Long gives 86 pages or 14 per cent. The percentage that Halleck gives to the remainder of the chronological division is as follows: 1789–1829, 15.5 per cent; 1829-65, 18 per cent; since 1865, 23 per cent. Long gives approximately 13 per cent, 16 per cent, and 27 per cent to the corresponding divisions.

Because of their literary quality, these texts are certain to receive consideration from school people. If the reader is contemplating a change of text in the field covered by these two books, he should not make a final decision without giving them a thorough examination.

R. M. TRYON

[1] William J. Long, *America: A History of Our Country*. Boston: Ginn & Co., 1923. Pp. viii+532+xlviii. $1.64. Reuben Post Halleck, *History of Our Country*. New York: American Book Co., 1923. Pp. xxxviii+534.

Corrective gymnastics in physical education.—Just as it has been conceded that a few athletic teams in no sense of the word constitute adequate physical education for a school, so has the idea of drilling all of the pupils in the same formal set exercises been extended into the much broader field of corrective gymnastics. Each individual pupil has his own special problem to solve, and it is to this end that corrective gymnastics work.

While this is a relatively modern science and is in many places not generally understood, numerous books on the subject have appeared. However, a further need has been felt by physical instructors who received their training before corrective gymnastics were so universally in demand as at present, and by those desiring to handle as effectively as possible corrective methods in large groups.

A book[1] has been prepared to meet this need, and its purpose is clearly expressed in the words of the author:

> Many excellent books have been written giving methods of examination, descriptions of symptoms, and some directions for the treatment of the different types of cases usually found in a corrective gymnasium. Each of these books, however, gives only a few exercises, and each of those, as a rule, for one special type of case.
>
> In my own work, as director of corrective gymnastics for girls in the University of Wisconsin, I have felt the need of a book which would give exercises for the many types that are treated in a corrective gymnasium and which could be used both as a textbook and as a reference book [p. v].

Even before corrective gymnastics became established as a special department, some attention was given to corrective exercises in the general gymnasium classes, although the only conditions treated were faulty posture and weak feet. Now the field has been greatly extended, as may be seen from a list of the subjects under discussion in a book of this nature. The work is sometimes divided into two departments, corrective or orthopedic and medical or remedial gymnastics.

The book contains twenty-one chapters of fairly uniform length. Each chapter includes some introductory and explanatory material concerning the subject treated, in addition to the corrective exercises listed for the particular defect under discussion. Numerous photographs, cuts, and drawings illustrate the reading material and the exercises given.

The first chapter opens with a rather interesting discussion of the development of "Female Gymnastics," beginning with the year 1826 in England and continuing to the present time. Old cuts are used to illustrate this account. In a somewhat similar manner, comparison is made in a later chapter of the correct posture for 1842 with that for 1922.

Generally speaking, the first seven chapters are concerned with certain introductory and explanatory material preliminary to the detailed lists of exercises found in the remaining chapters of the book. In these first chapters we find discussed such topics as the position and scope of corrective gym-

[1] Louisa C. Lippitt, *A Manual of Corrective Gymnastics*. New York: Macmillan Co., 1923. Pp. x+250.

nastics in physical education, qualifications of instructors, organizing classes, exercises for small children and older people, posture, etc.

Chapters viii–xxi give detailed exercises for the specific treatment of the various defects found in the field of corrective gymnastics. Among these are exercises for spinal curvature, flat foot, constipation, menstrual disorders, weak or stiff joints, reducing weight, etc.

While most of the exercises listed may need the interpretation of a physical education instructor, there is much valuable information at the beginning of each chapter, particularly in the first part of the book, for the administrator or teacher.

CARTER V. GOOD

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LOFTING, HUGH. *The Story of Mrs. Tubbs.* New York: Frederick A. Stokes Co., 1923. Pp. 96. $1.25.

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Recent issues of the Bureau of Education:

Bulletin No. 4, 1923—*Junior High Schools of Berkeley, California.*

Bulletin No. 21, 1923—*Specimen Junior High School Programs of Study.*

Bulletin No. 24, 1923—*Educational Extension.*

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